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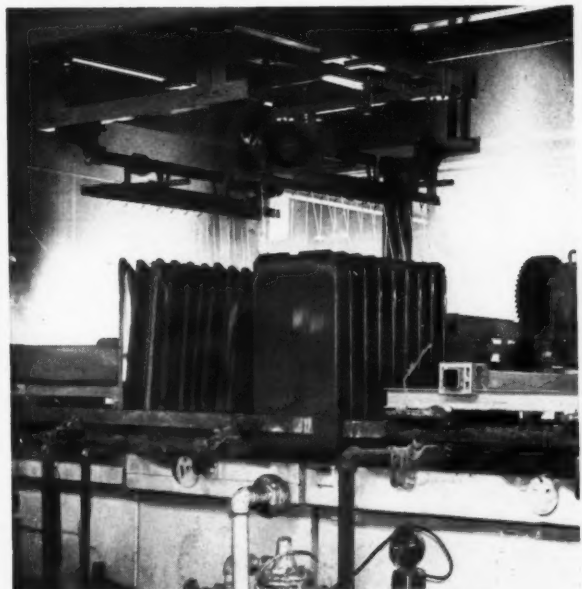
*Serving the Appliance and
Fabricated Metal Products Industry*

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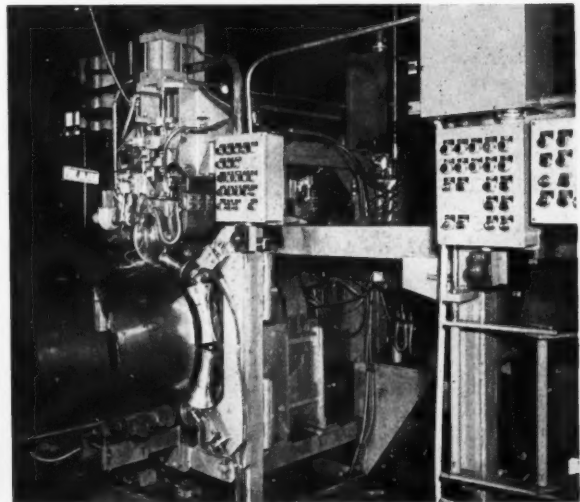
NOVEMBER 1961



One-Coat, Direct-On Porcelain Enameling at Roper — Page 42



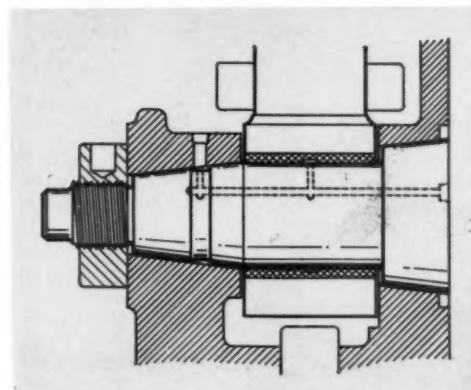
Westinghouse Speeds Up Distribution and Service — Page 49



How Flat Blanks Become Dryer Cylinders Automatically — Page 40



The Clearelease mechanism makes it possible to unstick the press in a matter of minutes. A taper wrist-pin in the press slide provides instant release. Simply loosen locking nut and tap wrist-pin in.



No Fear of Getting Stuck With a Clearing Torc-Pac

"Sticking" a press is a problem that can send a production manager to the nurse for tranquilizers, as you know. And presses **do** get stuck, let's face it. But here's what Clearing has done about it on the new Torc-Pac line of O.B.I.'s. "Clearelease", an ingenious mechanism built into the press slide makes it possible to unstick the press in a matter of minutes. It's simple and fast and the press is

back in operation before tempers can rise.

There are a lot of improvements on the new Torc-Pac. A clutch and brake unit that is as quiet as it is maintenance-free is an important plus. Controls are shock mounted. The streamlined design of Torc-Pac conserves floor space. Feeding is easy from any direction. Find out more about the new Torc-Pac. Ask for literature today.

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PO 7-8700

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Capitalize on high customer acceptance of steel; put the distinctive Steelmark on the products you make.



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More than a half-century of intensive research has gone into the development and improvement of Armco's special base metals for porcelain enameling. Armco Enameling Iron, for standard two-coat applications, has long been known as the "world's standard." Now Armco UNIVIT® is available for direct-on application of finish coats.

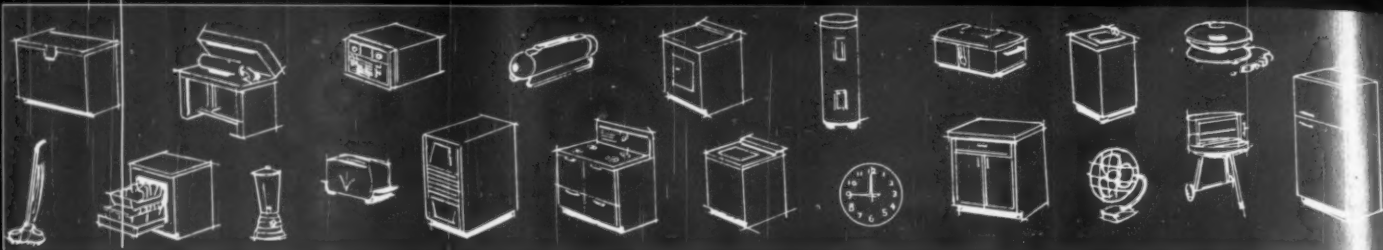
The first special Armco base metal was successfully porcelain enameled in 1910. Since then, more Armco Enameling Iron has been used by more porcelain enamelers than any other special base metal.

Whether you use two-coat or one-coat enameling practice, Armco's knowledge and experience assure you the finest in uniform enameling base metals, *plus* the know-how to help you solve fabricating or enameling problems. Armco Steel Corporation, 1421 Curtis Street, Middletown, Ohio.



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Sems
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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, sales management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is \$10.00 per year, domestic. To all other countries \$15.00 per year (U.S. funds). Single copies, \$1.00.

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This is an unretouched photograph of automotive and appliance trim formed of Sharon's bright annealed Stainless Steel. While it loses some of its sparkle in the advertising platemaking process, it gives you some idea of the brilliance of this new Stainless Steel. A detailed pamphlet has been prepared. Write for your copy today.

WHY DESIGNERS LIKE



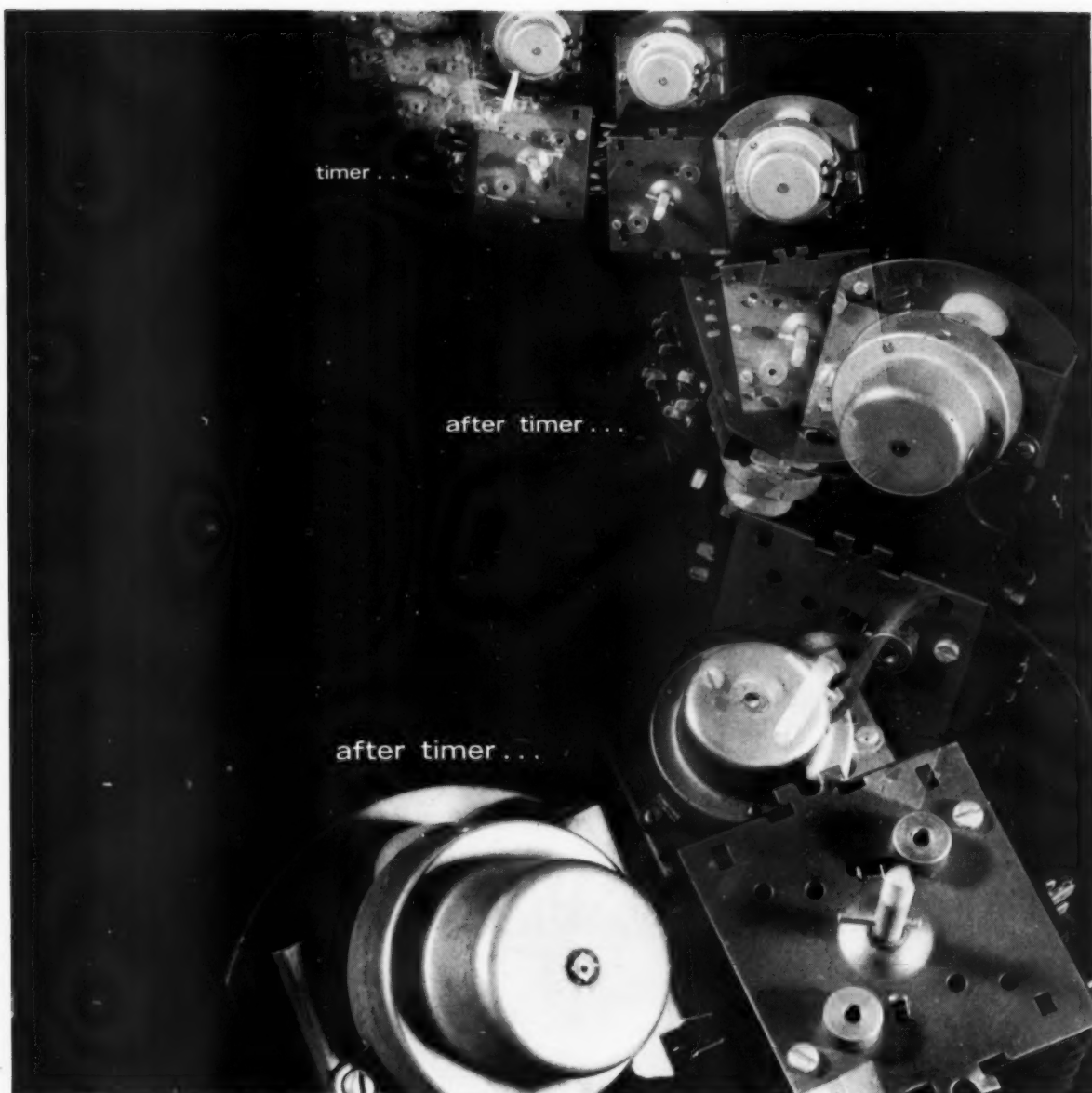
The brightest, most sparkling Stainless Steels ever developed are creating unusual excitement among manufacturers of our high-quality products. Automotive engineers, appliance designers, furniture people, architects and business machine makers, to name a few, are specifying Sharon *bright annealed* Stainless Steels to a greater degree than ever before. *Bright annealed* Stainless Steel is truly the best looking metal ever made. What's more, it has excellent forming characteristics and improved corrosion resistance, and it reduces or often eliminates buffing operations on high-finish parts. To accent and enhance the appearance of your products, think of the new *bright annealed* Stainless Steels, and when you do . . . think first of the *Sharon Steel Corporation, Sharon, Pennsylvania.*

SHARON* Quality *STEEL

AMERICA'S FOREMOST PRODUCER OF LIGHT STEELS



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Products with a Reliability Heritage...

... born of sound, thoroughly tested engineering design — and closely supervised production methods, which must consistently meet highest quality and reliability standards.

A recent comparison-of-performance survey conducted by a leading home appliance manufacturer prompted their Quality Control Manager to write:

"... this (survey) is an indication that quality was the main objective of your manufacturing operation."

Yet we continue to reach for the highest reliability which the appliances of today must have.

Come to Controls Company of America for control reliability.



Creative Controls for industry

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SELLING CONSUMER BENEFITS, NOT PRICE

A GUEST EDITORIAL BY *W. A. Wendler* • VICE PRESIDENT, SALES,
AMANA REFRIGERATION, INC.

AMANA'S BUSINESS PHILOSOPHY has been unchanged since the beginning of the company — that of building a quality product to give good value and to be sold at a fair profit by dealers and distributors. Emphasis has always been on building in quality — not to a price.

We are firmly committed to the profit system — which requires that a dealer and distributor make a profit. In order to insure these profits, the dealer must learn to sell consumer benefits and value, not price. The last decade has shown a declining profit picture for appliance dealers around the country.

It is hard to find any industry where the lowest priced item is the sales leader. During 1960, a very competitive year, many companies made rather drastic price cuts in the merchandising of white goods, with little or no effect on sales. This selling by price does not represent the answer.

A prominent appliance dealer, speaking at the NEMA Boca Raton meeting this spring, pointed out that it was ridiculous for the appliance industry to come out with a \$15, \$20 or \$25 promotional allowance per unit. According to this dealer, if the same amount of money had been put into advertising and promotion of a concept of what a product will do for the consumer, the appliance industry would not have been hit by the downward trend, at least not as severely.

At Amana, we have had some specific evidences of the success of this type of approach. In markets where we have been able to make very striking increases in sales volume, dealers and dealer salesmen were trained to sell the consumer benefits and value and quality of the product, rather than to emphasize price. This does not mean, of course, that prices must not be competitive, but they must be competitive only when measured by the yardstick of *quality and consumer benefits*.

Our experience in two of the nation's top ten markets further bears this out. In one of these markets, about six or seven years ago, we discovered that many dealers handling our products were following a practice of placing emphasis on price, rather than quality and what the product would do for the consumer. We launched an intensive training program and marketing program to insure selling in accordance with our basic philosophy. The result: our sales volume in this market has increased six fold.

In another of these markets, the same type of program gives every indication of doubling the volume in just three years.

We feel the sooner the appliance industry, as a whole, drops the price routine and embraces the consumer benefit concept, the sooner manufacturers, distributors, and dealers will be in a healthy profit position. Consumers will benefit,

too, by receiving greater value from the products they purchase from a dealer who is in a position to provide adequate service and assistance in the use of the product.

THE STATE OF THE SERIES

MPM'S "STANDARDIZATION SERIES" is now nine issues old. The series was kicked off in March of this year with a Finish Line editorial explaining the reasons for the series, how we planned to pursue the subject, and what we expected the campaign to accomplish.

In succeeding issues, both by-lined and staff-written articles have explored various facets of the subject. These articles have accomplished two objectives: the need for standardization in several areas of the appliance and fabricated metal product industry has been demonstrated; and examples of how standardization has reduced costs and increased product reliability have been presented.

To stimulate further interest and provide a convenient reference source for those who wish to review the early progress of the series, MPM has published a 20-page booklet containing the first nine articles on the standardization subject.

In addition to these articles, the booklet contains brief resumes of two previous MPM editorial series — packaging-shipping and appliance service.

Copies of the booklet are available free of charge. To obtain a copy, simply circle number 260 on the Reader Service card (pages 93 & 94) and drop the card in the mail.

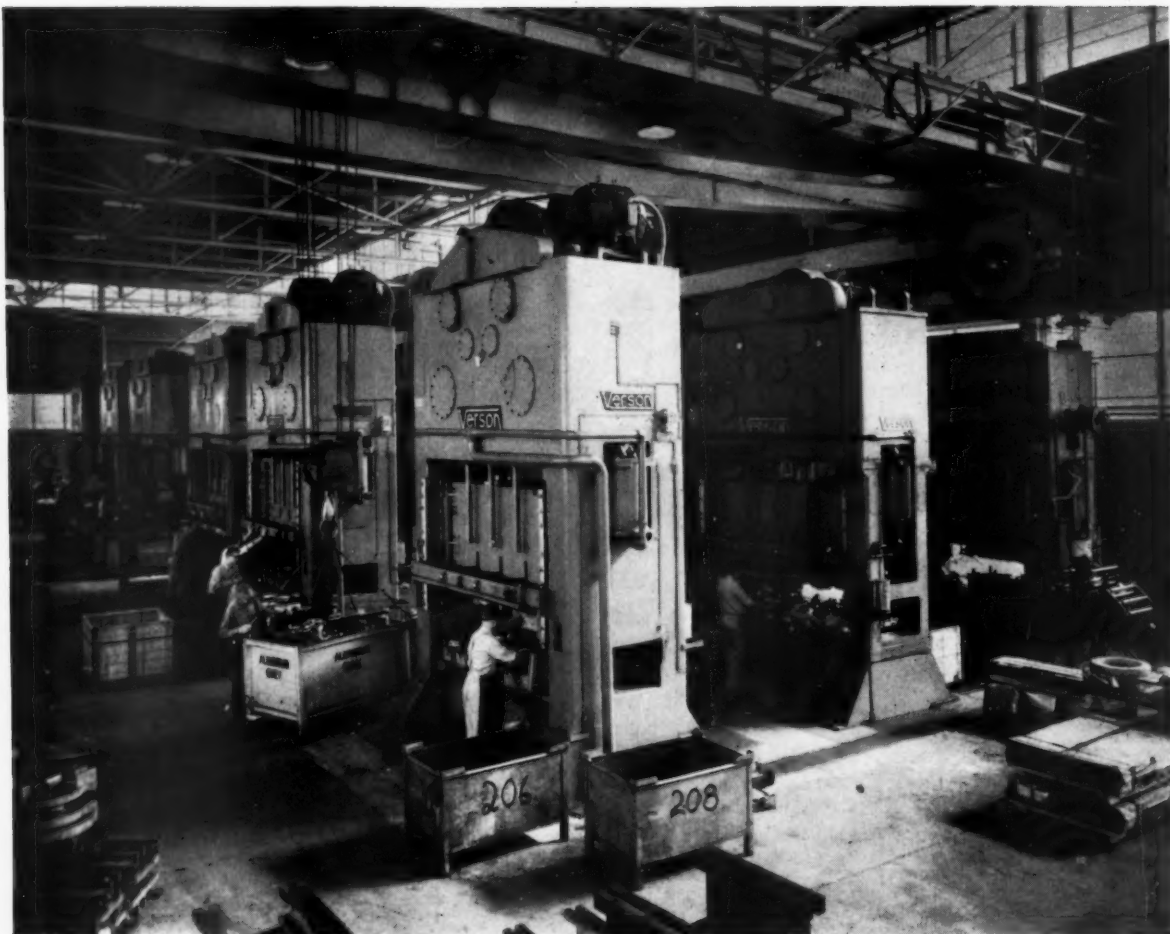
The standardization series is gaining momentum. Reader reaction has been encouraging. We feel the articles in the booklet represent only a good start — the end of the series is not in sight.

An open letter in the standardization booklet contains the following paragraph: "It has never been our belief that an editorial series, regardless of how comprehensive or how lengthy, can promote a revolution. We are convinced, however, that a publication can be of genuine assistance in promoting an orderly evolution which can result in benefit to its readership."

We invite the comments and suggestions of MPM readers to help speed this "evolution."

Dana Chase

EDITOR AND PUBLISHER



You can combine flexibility with efficiency with properly selected **Verson** Presses

In this era of the special machine we tend to overlook the economies of machine versatility. Lobdell-Emery Manufacturing Company, Alma, Michigan, a portion of whose press room is shown above, must combine production flexibility with manufacturing efficiency in the highly competitive automotive parts market.

Lobdell-Emery accomplish their objectives with an impressive line-up of rugged, versatile Verson mechanical presses and press brakes, selected for the economical production of such diverse items as hub caps, seat frames and station wagon panels.

Your Verson Representative will be pleased to go over your requirements with you, and show how Verson equipment can give the flexibility you need at costs that will help keep you competitive.



Catalog G-60 describes representative models of Verson's entire line of mechanical and hydraulic presses and press brakes. Write for your copy, today.



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LOW TEMPERATURE PORCELAIN ENAMELS

no sacrifice of
CHAIN SPEED
OR QUALITY

Ing-Rich has done it... again

We have developed Frit formulations which are giving highly satisfactory low temperature enameling results without sacrifice of chain speed or quality—in ground and cover coats both adaptable to color.

We can bring you definite proof of these satisfactory results.

We would like to point out that here again Ing-Rich proves the tremendous value To OUR Frit customers of that rare combination of scientific approach . . . PLUS . . . practical, technical Know-How.

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Porcelain Enamel Products
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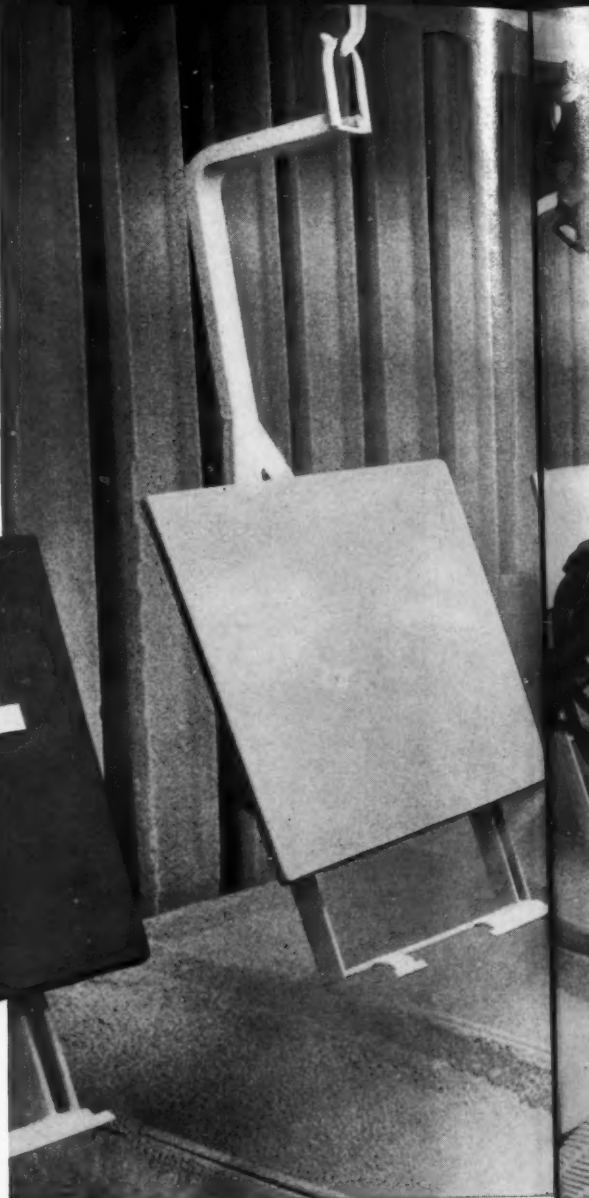
Direct-On?

Two-Coat?

**YOU'LL DO BETTER
IN BOTH WITH**



These direct-coated Bethnamel panels for range fronts are now ready for firing. At temperatures above 1525 deg F, Bethnamel shows excellent sag resistance (see graph at upper right, opposite page.)



Bringing direct-on porcelain enameling to practical reality was the goal of the Bethlehem engineers who developed Bethnamel enameling steel. How well they succeeded is attested by the immediate and continuing acceptance of this remarkable zero-carbon sheet.

But Bethnamel went on to prove it would give superior results in conventional ground-and-cover coating, also. Many enamblers run it interchangeably with other sheet materials.

Low-Carbon Sheet Easy to Draw . .

Bethlehem's open-coil annealing process is so efficient that the final carbon content in the sheet is reduced to about .001 pct, hence the widely used nickname of "zero-carbon steel."

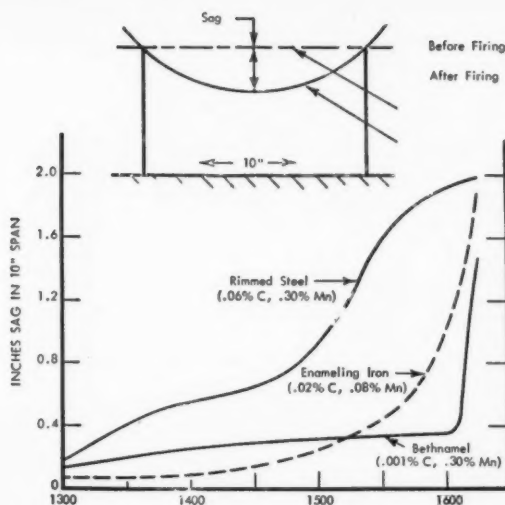
This negligible carbon content turns up a number of important benefits for the user. For one, Bethnamel is relatively soft and ductile, exhibits good drawing and welding properties.



*for Strength
... Economy
... Versatility*

BETHLEHEM

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Comparing sag of 20-gage Bethnamel, enameling iron, and cold-rolled rimmed steel. Standard PEI sag test was used, in which a 2 in. by 12 in. strip of steel, coated with blue ground coat, was supported between knife edges 10 in. apart, fired for 10 minutes, and allowed to cool to room temperature. Sag was then measured. Test firing temperature is usually 1600 deg F.

Changes in Cycle are Simple, Inexpensive

Conversion from regular two-coat enameling to a direct-on process is simple with Bethnamel. Special cover-coat frits are not usually necessary. Simple modifications in surface pre-treatment will, in most cases, do the trick.

Perhaps best of all is the fact that Bethnamel offers you the best enameling you ever had, at a cost no higher than that of regular enameling iron. Bethlehem is now equipped to serve your enameling-steel needs from our Sparrows Point, Md., and Lackawanna, N. Y., plants. And we're always ready to help you with technical assistance. As a starter, why not let us send you our Technical Folder 734?

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

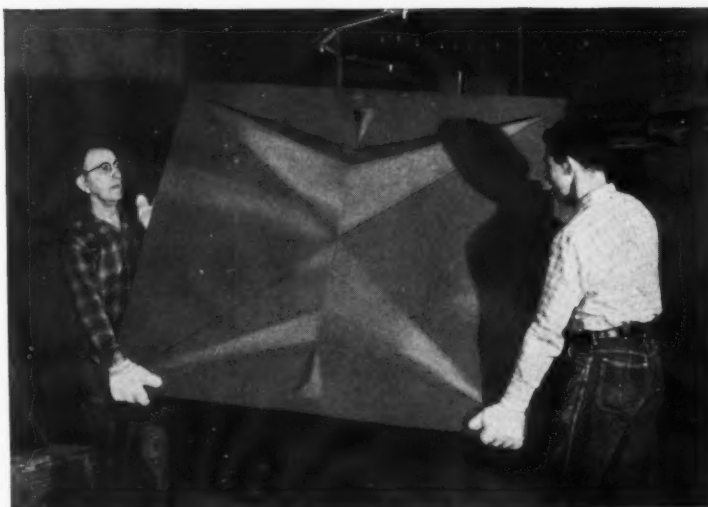
Export Sales: Bethlehem Steel Export Corporation

Eliminates Enameling Defects

Another advantage of Bethnamel, particularly in single-coat operations, is the elimination of boiling. Because this defect stems from the evolution of carbonaceous gases during firing, it is easy to see why a "zero-carbon" sheet would not present a boiling problem.

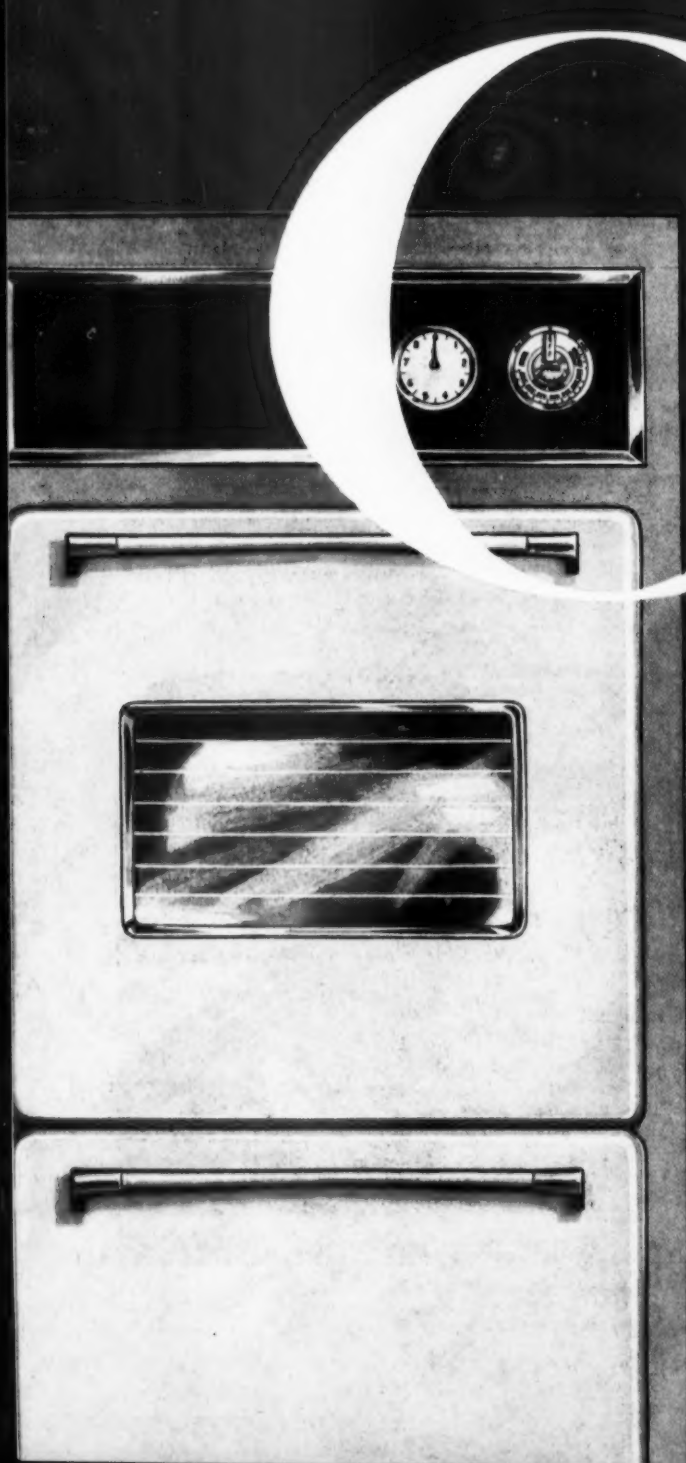
Bethnamel also shows high resistance to reboiling and fishscaling, two defects which often occur on enameling steels containing carbon.

M STEEL



Architectural panels, generally two-coated, are being increasingly made of Bethnamel because of high sag resistance and excellent flatness. Here, textured panels for a church building emerge from drying oven.

Another Robertshaw first...



oven- a-

greatest selling feature

While the food is cooking, the homemaker can—



Pick up the kids
at the swimming pool



Take a leisurely bath
or shower

-with- -mind™

ure since Burner-with-a-brain*



Entertain
cocktail guests

It doesn't even matter
if hubby is late for dinner

She never has to check the oven!

*A.G.A. MARK

This new control system will introduce the homemaker to **CONVENIENCE COOKING™** . . . a new concept developed by a team of Robertshaw technicians and home economists.

Here's all the homemaker has to do:

1. Set the timer for the required cooking time.
2. Turn the Oven-with-a-mind control dial to the correct cooking temperature.

When the cooking nears completion, the control system automatically reduces the oven to an ideal serving temperature. The food is held for minutes or hours *without further cooking*. After the first setting, the homemaker doesn't have to touch the oven until she is ready to serve the food . . . *at her convenience*.

Oven-with-a-mind is an improved version of the famous Robertshaw Flame Master® control with Lo-Temp setting combined with an automatic time control. This flexible control system can be mounted in any one of four positions on the front panel, in a compartment or on the back panel.

Outstanding Convenience Cooking features:



itself on *after* she leaves.

SIMPLICITY . . . ELIMINATES COMPLEX SETTINGS. Homemaker simply makes two settings when she puts food in oven. Cooking starts immediately; she has no doubts about the oven turning



HOMEMAKER "INSURANCE" . . . NO OVER-COOKING, NO RE-DIALING. She'll never again worry about having to delay dinner due to late arrivals, extended cocktails, etc. Oven-with-a-mind *automatically* holds food at optimum serving temperature. **AND** self-clearing feature eliminates re-setting after cooking; control returns itself to manual!



MEAT PROBE WITH INDICATOR (optional). Automatically controls oven temperature relative to internal meat temperature. When cooking nears completion, timer shows her the number of minutes remaining until meat can be served. If a delay is necessary, Oven-with-a-mind will hold meat at the selected degree of doneness for extra hours without further cooking.

PLUS REGULAR FLAME MASTER ADVANTAGES. Full range down to 140°. Thaws frozen foods; warms dishes. "No-Button" automatic oven pilot; if pilot goes out, she simply holds match to it. No costly service calls. Plan now to build Oven-with-a-mind Convenience Cooking into your deluxe line for '62—to upgrade your sales and profits.

VMA-9710-M

Robertshaw



NEW STANTON DIVISION
YOUNGWOOD, PENNSYLVANIA

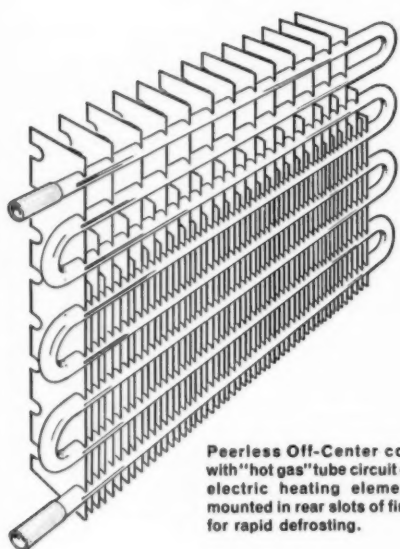
The name that **MEANS** temperature control

Circle No. 360 on Reader Service Card.

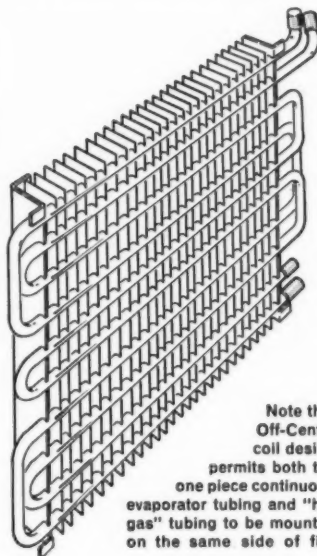
THIS RECOGNITION IS DESERVED

Completely frostless food storage is a proven accomplishment with Peerless Off-Center fin coil with built-in slots for electric cable defrost or hot gas tube circuit. Use Peerless Off-Center and you build your system around the most modern refrigeration design in the field today.

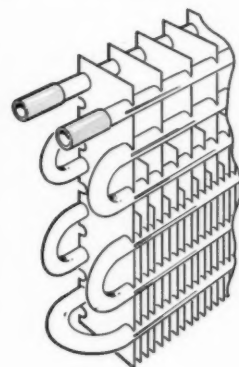
PEERLESS OFF-CENTER DESIGN OFFERS THESE OUTSTANDING ADVANTAGES:



Peerless Off-Center coil with "hot gas" tube circuit or electric heating element mounted in rear slots of fins for rapid defrosting.



Note that Off-Center coil design permits both the one piece continuous evaporator tubing and "hot gas" tubing to be mounted on the same side of fin.



A single Off-Center aluminum fin incorporating a two row coil design with one piece continuous evaporator tubing and multiple slots for electric defrosting element.

1. Continuous aluminum or copper tubing is securely locked into multiple recesses in the edge of the aluminum fin. There are no soldered return bends. "Where there are no joints, there are no leaks."
2. The same fin edge can also receive and hold either continuous hot gas tube circuit or an electric heating element for intermittent frost removal. Mounting can be made on either front or back edge of the fin.
3. Fin spacing can be varied for most efficient air movement—induced by fan.
4. Coil compactness increases storage area. And
5. Best of all, a Peerless Off-Center fin coil now costs less.



You are invited to take advantage of Peerless experience in designing and building fin coils at new low costs.

PEERLESS OF AMERICA, Inc.

Manufacturers of Refrigeration and Air Conditioning Coils Since 1912
5800 N. Pulaski Road, Chicago 46, Ill.

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MPM

newsquotes

If the architectural metal industry is to grow and enjoy a greater and more profitable share of this market, I believe our task is to remove confusion, elevate our standards, develop greater effectiveness through mutual support and cooperation and improve the business climate. — *E. A. Kister, Allegheny Ludlum Steel.*

All of us — the public and the air conditioning industry — will be better off when we abandon over-emphasis on cooling capacity and make our judgments on the basis of all the factors that contribute to performance. — *U. V. Muscio, Fedders.*

Businesses in the \$2 million to \$10 million category are dropping from the picture fast. They may be prosperous up to \$2 million — then the chief executive who has developed and headed the business fails to move up to a management station which divorces itself from the "do everything" category. — *Hoke S. Simpson, Graduate School of Business, Columbia University.*

It's time the building industry gets behind the plans of urban renewal and accelerated building programs, just as the auto industry got behind the government and state road building programs. Many industry groups should support the national program. — *Peter Blake, Architectural Forum.*

Republic is unwilling . . . to entrust its future destiny solely to the modernization and improvement of its producing units. No matter how well we can produce our goods, they must be sold if we are to live. Thus, we are today stressing marketing and sales promotion to a degree greater than ever before. While some claim that steel lives principally from a derived demand, we at Republic are not content to accept a passive role in the campaign to generate an increase in products made of steel. — *Thomas F. Patton, Republic Steel.*

It's generally accepted that the average homemaker buys only about three ranges in her lifetime. That means she shops for a new one only about once every 15 years. So, in some ways, all of the features added in the last 15 years are new to her. — *Leroy Klein, Caloric.*

The corporation that is able to function successfully in our highly competitive American capitalistic system is the corporation which is blessed with individuals who are fired with the spark of creativity. For if the people who make up a corporate organization are alert, responsible, intelligent, and imaginatively creative — it has been historically true that the corporation prospers and grows and remains profitable and its brand names do not disappear from the market place. — *Fred Maytag II, Maytag.*

DRAKE "ECONOGLO" Neon Glow INDICATOR LIGHT ASSEMBLIES

**for maximum performance
at minimum cost . . .**

Ideal as low-budget indicators on standard line voltage. Thoroughly practical — easy to mount from front of panel, secured by Tinnerman nuts or Snap-in plugs. Available with or without current-limiting resistors . . . with either plain or fluted lenses, or flat caps — plain or numbered . . . in your choice of Colorless, Red, Yellow, White. High-brightness neon glow lamps give clear visibility, long life.

"Econoglo" units are suggested for such applications as: Radio and TV, Hi Fi, Communications Equipment, Computers, Instruments, Toys, etc., etc.



★ SEND FOR DATA FOLDER 6107
WITH FULL DETAILS AND
SPECIFICATIONS

DRAKE
MANUFACTURING COMPANY
4624 N. OLCOTT AVENUE • CHICAGO 31, ILLINOIS

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AND INDICATOR LIGHTS

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- No. 6002 — Nos. 103
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- No. 5803 — No. X3245
Electronic Trigger Switch
- No. 6107 — "Econoglo",
"Mineon", "Tinylite"
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(6-page folder)

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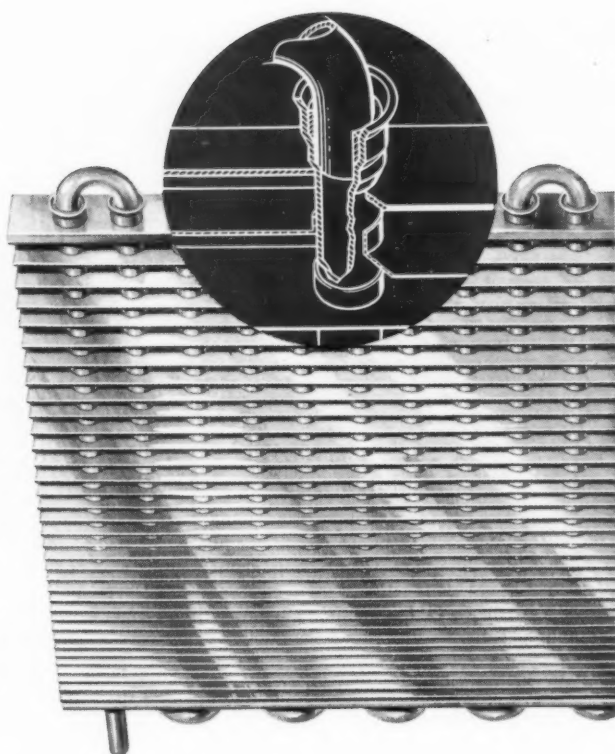
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MINIATURE LIGHTING SPECIALISTS

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*Now more practical
and efficient than ever!*

Aluminum Tubing For Air Conditioners



Epoxy-Bonded Tube Joints Clear Way for Low-Cost Aluminum Tubing in Evaporators, Condensers

Aluminum tubing has always made a lot of design sense for fin-tube air conditioning evaporators and condensers: It's economical. It won't rust. It provides excellent heat transfer. With aluminum fins, it eliminates bi-metallic corrosion.

And now, thanks to a practical tube bond method developed by Reynolds, and using epoxy resin, aluminum tubing can provide important advantages in production and performance, as well. The epoxy bond provides a strong, durable return bend—with no danger of flux corrosion.

Exhaustive tests, in the laboratory and in actual field installations, have proved the toughness of Reynolds new bonding technique—and the efficiency of Reynolds Aluminum tubing. The epoxy makes production much simpler, too. No welding, brazing, or soldering is necessary in fabricating the returns in fin-tube assemblies.

With this new bonding development, Reynolds Aluminum fin-tubing is a valuable addition to the air conditioner manufacturer's roster of cost-cutting, product-improving aluminum products: Reynolds pre-painted sheet—Colorweld TM—offers an efficient and attractive answer to cabinet design. Available in a full range of colors, this tough aluminum sheet has a baked-on enamel finish that takes any ordinary forming operation, and provides a handsome, durable cabinet.

Other Reynolds Aluminum products have been developed to cut weight and cost as motor mounts, fan blades, grilles, trim—even name plates.

Reynolds does not fabricate finned-tube evaporators, but does supply raw material for customer fabrication. For details, call your local Reynolds office, or write *Reynolds Metals Company, P.O. Box 2346-AM, Richmond 18, Va.*



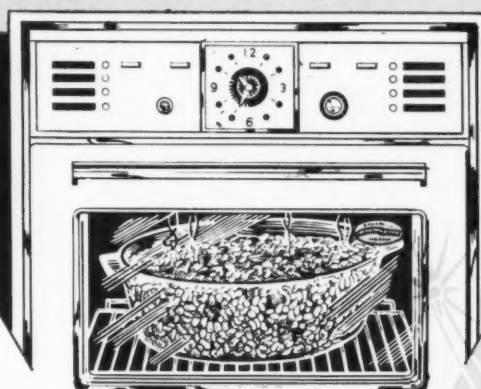
REYNOLDS ALUMINUM

Watch Reynolds exciting TV programs on NBC: *The Dick Powell Reynolds Aluminum Show* every other Tuesday; *Say When*, weekdays; *All Star Golf*—in living color—every Saturday.

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PERMA-VIEW[®] NON-FOG WINDOWS ARE A SMALL PART OF YOUR OVEN

**BUT A
BIG SALES
FEATURE**



THE DISPLAY OF
THIS LABEL
GUARANTEES
VISIBLE
COOKING

Modern homemakers in the market for a new range have become increasingly selective. They have come to prefer a range made more attractive by clearly visible cooking. Consumer's acceptance has made PERMA-VIEW America's largest selling range window.

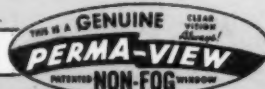
The window is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." The NON-FOG window meets the demand for visible cooking, and the label is recognized by the consumer as a guarantee they can depend upon.

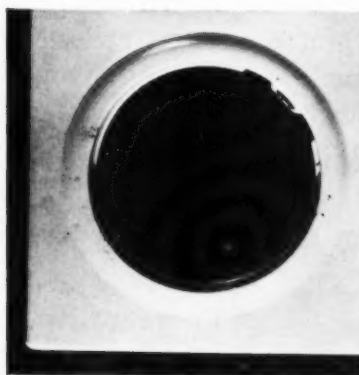
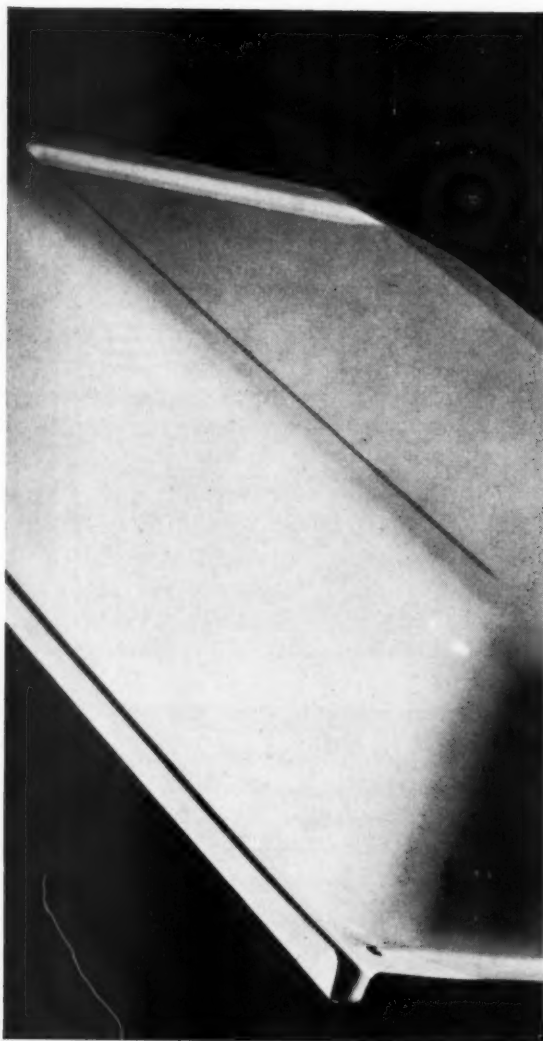
As a practical, economical and effective component, PERMA-VIEW can be your best sales feature. Be sure to take advantage of this feature in your new models—either free-standing or built-in, and let your prospective customers know it by using the label on all of your ranges.

MILLS PRODUCTS
INCORPORATED

OUT OF OUR CARTON — INTO YOUR DOOR

1015 West Maple Road, Walled Lake, Michigan • Market 4-1591



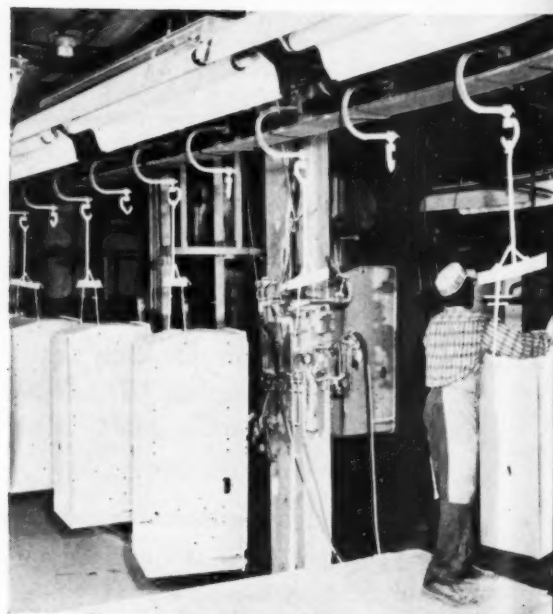


Porcelain Enamel



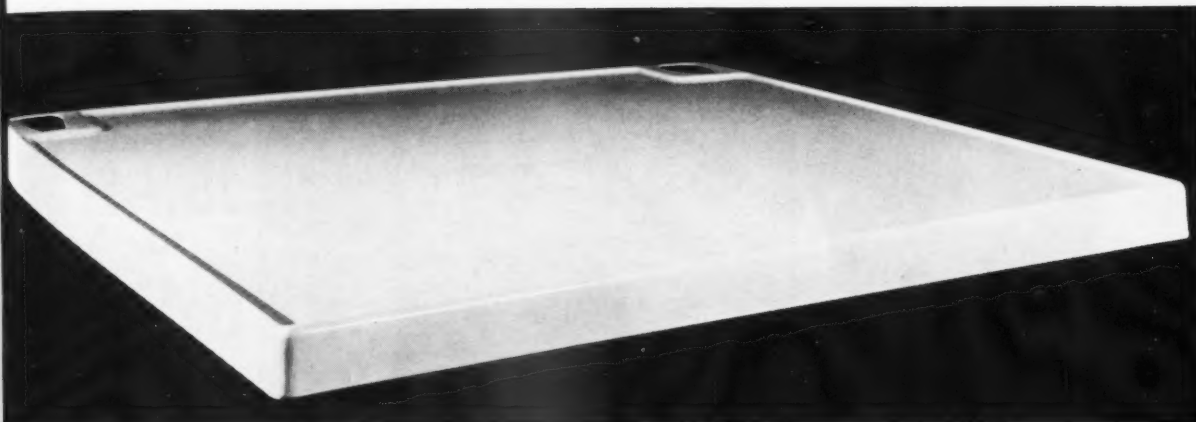
Capitalize on high customer acceptance of steel; put the distinctive Steelmark on products you make.

All parts shown were fabricated from Armco UNIVIT, and porcelain enameled with a single coat applied directly to the base metal. This process compares favorably in cost with baked-on paints.



New steels are
born at
Armco

on UNIVIT Competes with Paint in Cost



Put more sales appeal into your baked-enamel products by changing to one-coat porcelain enameling with new Armco UNIVIT® — often at no extra cost. This special finish has already proved competitive with the better organic finishes in high volume production.

Housewives prefer the color-fast, flint-hard, durable, easily cleaned surface of porcelain enamel. What's more, thin coatings obtainable with UNIVIT assure more resistance to mechanical damage, another potent sales point with homemakers.

For two-coat porcelain enamel finishes, it will pay you to specify service-proved Armco Enameling Iron. More than a half-century of commercial production and continuous research have made this well known base metal the "World's Standard" for two-coat practice.

For complete information on both grades, write **Armco Division, Armco Steel Corporation, 2691 Curtis Street, Middletown, Ohio.**



Armco Division

Circle No. 305 on Reader Service Card.

Latest example of **LUX LEADERSHIP:**
New THERMO-MAGIC
Oven Control



STEP 1

Simply set clock for the necessary cooking time.

STEP 2

Simply set thermostat at desired cooking temperature.

HOW TO COOK

No oven control system has ever been simpler... or surer... to use. When pre-set cycle concludes, setting automatically returns to manual, thermostat drops back to "keep warm"... holds foods at just-cooked temperature for hours.

Each year—literally without fail—leading appliance manufacturers look to Lux for the new timing and control device that will increase the efficiency and enhance the appearance of ranges, washers, dryers.

And now, Lux, faithful to this outstanding reputation, proudly introduces THERMO-MAGIC, the oven control system that makes it possible to control cooking precisely and to keep what's cooked at a desired just-cooked temperature for hours!

Additionally, Lux Thermo-Magic offers this combination of outstanding features and advantages:

- Extremely sensible and simple 2-step setting that eliminates the cause of countless unnecessary service calls by automatically returning to manual on completion of pre-set cooking cycle
- Exclusive 4-hour minute minder with melodious chime
- Exclusive Lux lube-less motor bearings that end common cause of timer failure
- Elimination of bacteria spoilage of meat, fowl
- Exceptionally compact design ideal for built-ins

Thanks to Lux engineering, Thermo-Magic makes oven control the easy, predictable effort it should be. Incorporate this advanced control system in your range for greater sales. Write for new brochure that describes Lux THERMO-MAGIC.

MPM

Robertshaw MR. CONTROLS

WRITE FOR
 FULL DETAILS AND PRICES TO:

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INSIDE OR OUTSIDE... FERRO PORCELAIN ENAMELS STAND UP BETTER

Whether it is laundry or cleaning equipment, or commercial structures which house it, Ferro porcelain enamels produce better finishes *inside and out*.

High temperatures, abrasive wear, strong detergents, harsh alkalies demand the lifetime finish which only porcelain enamel can give. Porcelain enamel stays attractive, too, because it is easily cleaned . . . an important factor in public acceptance.

Ferro knows porcelain enamel because nearly all stages of its use, from frits through final product, are a concern of one or another of its various divisions. Ferro's continuing research and development, in all stages, can provide you with ready and right answers to applications involving the use of porcelain enamel. Call or write us. You'll get a prompt response.



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Circle No. 325 on Reader Service Card



NEW PRODUCT REVIEW

... what MPM readers are making

(Left) — EUREKA WILLIAMS' upright vacuum cleaner Model 258A can be quickly adapted to provide its carpet suction for above-the-floor cleaning jobs, such as furniture, bookshelves, venetian blinds and other accessory cleaning. After removing the nameplate, the special hose adaptor is clicked into place. A suction seal plate snapped underneath the cleaner channels the suction power from the rug cleaning area to use for accessory cleaning attachments.



(Right) — WESTINGHOUSE'S new immersible buffet fry pan also is a broiler. In the lid of the appliance is a corox broiler element similar to that found in an electric range. The broiler element, like the control, is removable and both the pan and the lid can be immersed for cleaning.



(Left) — LADY CASCO'S Chef-Mate is a combination mixer, blender, coffee grinder, juicer or knife sharpener, convertible in seconds from one to the other. The "Easy Grip" control has 12 speed settings, plus intermediate speeds. The dial numbers are clearly marked to conform with front instruction panel for exact speed setting for every attachment and every function.

ADMIRAL'S newly expanded 1962 line of built-in appliances includes gas ovens and surface units for the first time. The gas and electric ovens have the same dimensions and offer the homemaker her personal choice of fuel. Three electric wall ovens are in the new line, including an Imperial double oven model for the first time. Oven door colors are white, pink, turquoise, yellow and copper-bronze or brushed chrome, with or without picture windows.

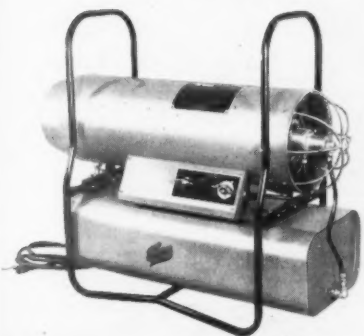
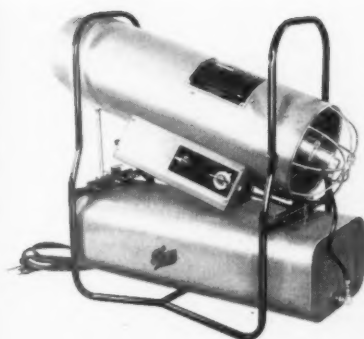


(Left) — REPUBLIC-TRANSCON'S top loading clothes dryer is available in gas or electric models, and features a glasslined, non-perforated cylinder for maximum clothes protection, quiet, floating suspension, 18-lb capacity, complete time and temperature controls, heat and weight safety controls, a ¼-horsepower motor and a high velocity fan.





INTERNATIONAL DRYER SALES' Safe-T-Steam, a low pressure steam dryer, is said to operate on less fuel than conventional dryers, and has no open flame or pilot light. The unit is equipped with an ultra-violet purifier. It is said to be the coin-operated laundry industry's first low pressure steam dryer.



THOR POWER TOOL'S new space heater is a portable oil-fired unit for temporary heating and drying in frigid working areas on construction sites and for all industrial emergency applications. Equipped with a low pressure rotary-type burner, the unit provides .90 gal. fuel consumption per hour, permitting it to operate 13 hours continuously.



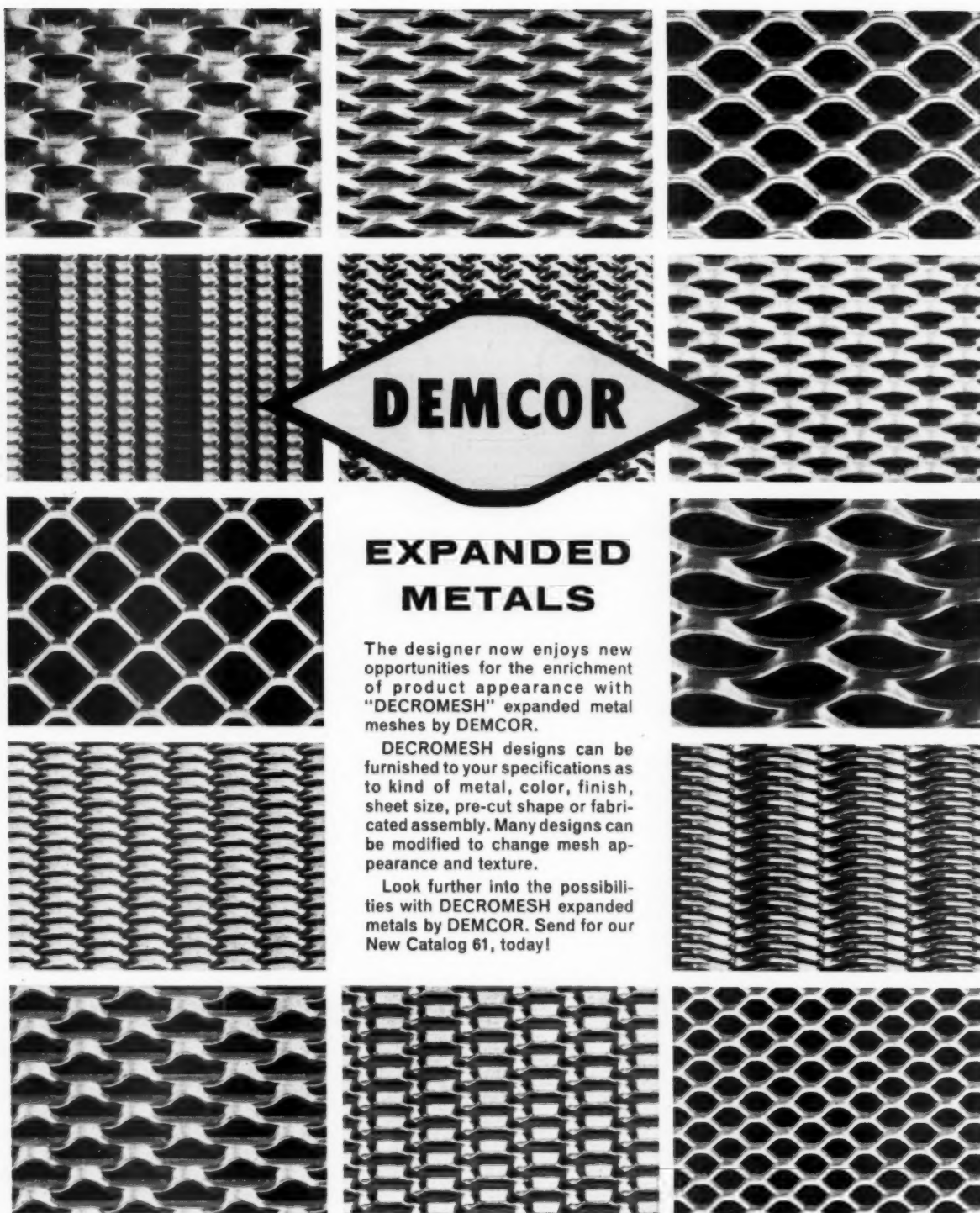
WASTE KING has introduced a line of drop-in electric ranges featuring a patterned glass oven door. The Universal drop-in range combines oven and surface cooking elements in a single compact unit. The entire one-piece unit with 19-in. oven and four heating elements can be built into a two-foot cube.



(Left) — RUUD'S new line of commercial gas water heaters delivers large-volume, high-temperature water at lower cost because of longer tank life. The line comprises nine Copper Sanimaster models with tanks of pure, solid copper reinforced with steel. Designed to meet the requirements of all commercial, industrial and institutional buildings, the units utilize hourly heat inputs from 55,000 to 360,000 Btu, and deliver from 46 to 300 gallons at 100 degree temperature rise.



SPEED QUEEN'S automatic washer has a large capacity tub said to be capable of holding 20 to 30 percent more fabrics than others. The washer also has eight different pushbutton cycles which automatically determine correct wash and rinse temperatures, agitator action and spin speed for the type of fabric being laundered.



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MANUFACTURERS OF MICROMESH, DUROMESH AND DECROMESH EXPANDED METALS

Circle No. 315 on Reader Service Card.

editor's mail

On the subject of appliance service

Gentlemen: I have recently been advised that your magazine frequently contains articles pertaining to appliance service. Since this is the function of our department, I would appreciate being included on your mailing list. My address is as follows: Jerry Jaske, Customer Service Engineer, Whirlpool Corp., Plant #3, St. Joseph, Mich.

Jerry Jaske, Customer Service Engineer, Laundry Whirlpool Corp. St. Joseph, Mich.

Breakdown on fans

Gentlemen: We are interested in receiving detailed information on a figure which appears in your Eighth Annual Market and Statistical Review under the heading — "Electrical Appliance Sales." This is the 1960 figure (4,672,000) on fans.

Since we are manufacturers of all types of air-moving equipment — fans, blower wheels, etc. — we would like to know the types of fans which make up this figure, as well as any other pertinent information which you may have on the fans comprising this figure.

Your attention to our request will be greatly appreciated.

C. A. Forth, Jr., Vice President Brookside Corp. McCordsville, Ind.

We are pleased to learn of your interest in our "Eighth Annual Market and Statistical Review." The detailed information on fans is as follows: Attic — 85,000; Desk & Bracket — 1,200,000; Hassock or Floor — 95,000; Kitchen Ventilation & Exhaust — 1,020,000; Range Hood-Self Contained — 610,000; Window Ventilating — 1,337,000; and Portable Roll-Aparts — 325,000. Total — 4,672,000.

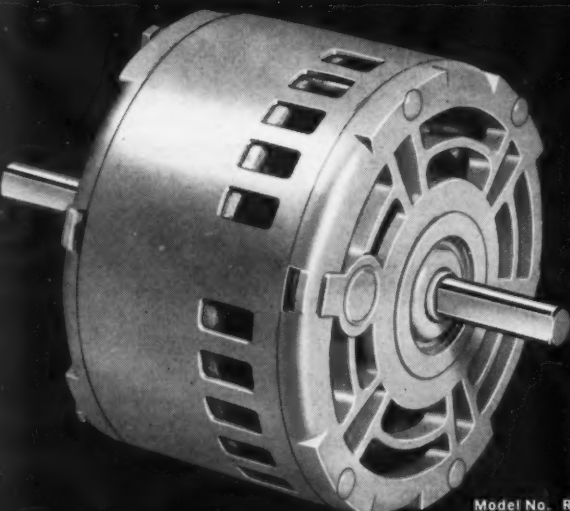
The Editors

A request for statistics

Gentlemen: I have been a regular reader of METAL PRODUCTS MANUFACTURING since 1954, first at Hamilton Mfg. Co., Two Rivers, Wis. and now here at All-Steel Equipment Inc., Aurora, Ill. In addition to my position at All-Steel, I am a graduate student of business administration, and I have a request which may be slightly out of the ordinary for you.

Can you suggest a source or sources for statistical and descriptive information on the Room Air Conditioner Industry? I need this information for a course project this fall semester. Your "Metal Products Statistics" department lists room air conditioners; I assume the figures shown are factory sales. Would

TO PAGE 47 →



Model No. Ratings

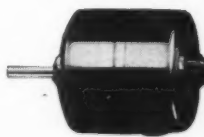
| | | |
|---|------|------|
| MODEL 6E—permanent split capacitor, 6 pole, 1050 rpm. Quieter and cooler running than other current design motors, this L-N motor can put an end to problems of high current drain with low current requirements. Excellent power factor and efficiency in room air conditioning use. | 646E | 1/3 |
| | 486E | 1/4 |
| | 406E | 1/6 |
| | 326E | 1/10 |
| | 246E | 1/15 |

Shaded pole motors (1/150 to 1/4 hp) and PSC motors (1/15 to 1/3 hp)

EFFICIENT! DEPENDABLE! LOW COST!

SPECIFY LEECE-NEVILLE MOTORS to upgrade quality in air conditioners, refrigeration, pumps, fans, heating units

Leece-Neville offers you a complete line of shaded pole and permanent split capacitor A.C. motors and fractional D.C. motors —with horsepower ratings from 1/150 to 1/3 hp. All L-N motors are capable of meeting U.L. or C.S.A. application tests. Select a basic unit modified to your specification, or a special motor (custom engineered) to meet your requirements. Modern facilities assure top quality and delivery to your schedules. For complete information, write The Leece-Neville Company, Department MP-11, Georgia Division, Gainesville, Georgia.



D.C. MOTORS — Leece-Neville custom engineers more than 300 new D.C. Motors every year for car, home and industry. For details, write D.C. Motor Division, Cleveland 3, Ohio.



Circle No. 339 on Reader Service Card.

Creativity multiplied through standardization

BY *Ralph C. Dahlin*, • CHIEF STANDARDS ENGINEER,
BECKMAN INSTRUMENTS, INC.

THE NECESSITY FOR MAINTAINING tight financial controls has resulted in an increasing awareness of the need for standardization and its valuable methods of eliminating redundancy in the solving of problems. Reinvention of existing devices and methods, and the resolving of old problems, are luxuries which industry can no longer afford.

Every design project is subdivided into hundreds of individual problems, each of which must be solved prior to the release, production and sale of the end product. Each component selected, each material specified and each dimension of a drawing represent answers to specific problems.

More creative time

Only a small number of these problems, however, are of a major proportion, but it is the solution of these major problems that to a large degree constitutes the creative aspects of the overall design of a specific product. It is obvious, then, that if the time spent to solve a recurring, but routine problem is reduced to a minimum, design engineers can spend the bonus time and effort on the creative solution of the more unique problems.

It must be noted that every designer or design engineer has a mental catalog of personal standards. These he uses for solutions to the everyday problems of his job.

These personal standards, however accurate, may differ from those used by any other designer. Because of this, it is common for five engineers in the same company to arrive at five different, but still adequate, solutions to the same problem.

At Beckman Instruments, Inc., a classic problem in the design and development of electronic instruments is the search for a device for joining two or more parts together so they can be disassembled later for service adjustment or for the attachment of accessories. The solution, a simple one, is found usually by employing a threaded fastener.

Time consuming phase

Most often a simple machine screw of sufficient diameter and length will do

the job, and most design engineers arrive promptly at that solution. However, here the similarity of solutions ends and the time-consuming portion of

the problem begins. It involves the selection and specification of the particular screw to be used.

First, the designer must determine the

FIG. 2

TIME REQUIRED FOR MACHINE SCREW SELECTION AND SPECIFICATION: NEW PART VS. STANDARD PART

2 STEPS — AVERAGE TOTAL TIME: 6 MINUTES

1. Review standards manual (available on desk) and select acceptable part.
2. Enter part number and noun name on assembly drawing, parts list and bill of material.



EXISTING
STANDARD PART

6 STEPS — AVERAGE TOTAL TIME: 40 MINUTES



NEW PART

6. Enter part number and description on assembly drawing, parts list and master bill of materials.

5. Submit request to part number control group and obtain company part number.

4. Fill out company part number request form.

3. Determine manufacturer's catalog number and ordering information.

2. Review catalogs and select acceptable component.

1. Determine possible sources and obtain catalog from files.

STANDARDIZATION SERIES

diameter, pitch and length of the screw. Then he must determine such characteristics as head style, drive type, material and finish. A correct answer may be obtained in a few seconds from his mental file or from a parts catalog. Or it may take extensive searching to find a correct answer.

The variety of solutions that can be applied to such a problem was illustrated graphically at Beckman several years ago. At that time, as part of the company's fastener standardization program, a careful look was taken at the variety of machine screws carried in assembly floor stock room by the company's Product Standards Department.

189 possibilities

It was discovered (See Fig. 1) that, for any given length, diameter and pitch, a designer could specify 189 different combinations of headstyle, drive, material and finish and be assured that something similar was in stock. The company, of course, did not stock that many varia-

tions for each thread-length combination and, therefore, more often than not, when a designer made his selection and the design was released to production, it meant a new item added to inventory.

The time consumed in such a search is almost always an important factor in a designer's job completion time table. Reduction of search redundancy and reinvention is to a large measure the goal of a formal standardization program.

Such a program must have as its objectives the economy of volume purchases, a reduced variety of parts and materials, and the development, recording and dissemination of the best solutions to the recurring engineering design problems that will be encountered within the organization.

These were the goals for the establishment of the standardization program at Beckman Instruments. It was concluded at Beckman that the majority of the problems which involved the use of machine screws could be solved with the use of only eight rather than the 189





























Author Ralph C. Dahlin, Beckman's chief standards engineer, joined the company in 1957 as a standards engineer and was named to his present position in February 1959. Prior to joining Beckman he was a lead engineer in the standards section of the Missile Div., North American Aviation.

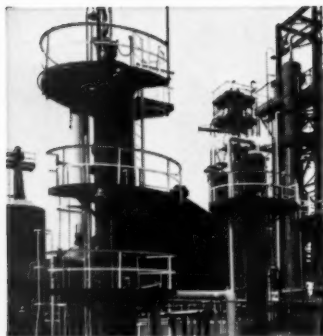
combinations of head style, drive type, material and finish. These eight combinations were issued as a standards list.

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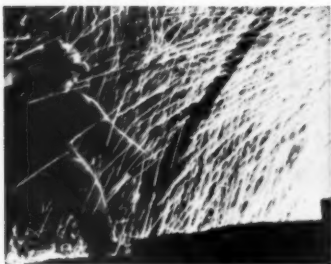
FIG. 1

MACHINE SCREW STANDARDIZATION

| | PRIOR TO STANDARDIZATION | AFTER STANDARDIZATION |
|------------------------|---|--|
| HEAD STYLES |  FLAT HEAD  ROUND HEAD  PAN HEAD  TRUSS HEAD  BINDER HEAD  OVAL HEAD  FILLISTER HEAD TOTAL: 7 HEAD STYLES |  FLAT HEAD  PAN HEAD TOTAL: 2 HEAD STYLES |
| RECESS TYPES |  SLOTTED  PHILLIPS  CROSS TOTAL: 3 RECESS TYPES |  SLOTTED TOTAL: 1 RECESS TYPE |
| MATERIALS AND FINISHES |  STEEL, BLACK OXIDE  BRASS, NICKEL PLATE  STEEL, PARKERIZED  STEEL CAD. PLATE  BRASS, PLAIN  STEEL, NICKEL PLATE  BRASS CAD. PLATE  STAINLESS STEEL  STEEL PLAIN TOTAL: 9 MATERIALS & FINISHES |  STEEL CAD. PLATE  STEEL, BLACK ENDURANCE  STAINLESS STEEL  STEEL, NICKEL PLATE TOTAL: 4 MATERIALS & FINISHES |
| | FOR A GIVEN DIAMETER AND LENGTH A MAXIMUM OF 7 (HEAD STYLES) X 3 (RECESS TYPES) X 9 (MATERIALS AND FINISHES) = 189 VARIETIES | FOR A GIVEN DIAMETER AND LENGTH A MAXIMUM OF 2 (HEAD STYLES) X 1 (RECESS TYPE) X 4 (MATERIALS AND FINISHES) = 8 VARIETIES |



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dollars
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Circle No. 301 on Reader Service Card.



Seated at the speakers' table at the 30th annual meeting of the Porcelain Enamel Institute are, from left: Mr. and Mrs. John C. Oliver; Mrs. and Mr. W. H. Lowry; Mrs. and Mr. John C. Winget; Mrs. and Mr. R. N. Smith; and Mrs. and Mr. H. A. Ringelberg.



WINGET

We need a written plan to govern the PEI activity for the next five years to a decade.



SCHERR

The PEI needs more contacts with individual designers and design associations. In 14 years only two companies have sent men in to our office to check possibilities.



SIMPSON

All personal development is self development — individual development. However, the actions of management have a great deal to do with workers on the way up.



BLAKE

The architect must be reminded of a material, but he also must be given assistance on how it can be used.

PEI members discuss management and competition

AN MPM STAFF REPORT

VITALITY IN MANAGEMENT is, we believe, the most essential element in any business today. Without it, no amount of investment, new plant equipment, or organizational changes will prove effective. With it, even the smallest company can experience a healthy growth pattern and can hold its own against any competition . . . With these words, W. H. Lowry, chairman of the program committee for the 30th annual meeting of the Porcelain Enamel Institute, voiced the theme of the meeting held at The Greenbrier, White Sulphur Springs, W. Va., October 5, 6 and 7.

Headlined speaker under the management banner was Hoke S. Simpson, director of executive programs, Graduate School of Business, Columbia University.

Industrial design and architectural applications came in for a full share of attention with Samuel Scherr, president of the industrial design firm of Scherr & McDermott, Inc., who spoke on "Vitality in Design;" and Peter Blake, managing editor of *Architectural Forum*, who discussed "Vitality in Architecture."

Mary Ann Scherr, wife of the design speaker, entertained the ladies with a demonstration of jewelry making techniques.

Winget president for '62

John C. Winget of Armco Steel Corp. continues as president of the trade association of producers of porcelain enamel products and suppliers to the industry, having a year to serve of a two-year term.

Named to the position of senior vice president was H. A. Ringelberg, Challenge Stamping & Porcelain Co.

Other vice presidents elected were: P. M. Corp, Briggs Manufacturing Co.; E. M. Hommel, The O. Hommel Co.; and C. S. LeCraw, Jr., U. S. Steel Corp.

J. W. Vicary, Ervite Corp., is immediate past president; and R. H. Turk,

Pemco Corp., was re-elected treasurer. John C. Oliver was re-elected secretary and managing director of the Institute. The chairman of the Institute's board of trustees is R. N. Smith, Temco, Inc.

Executive committee members elected to serve with the officers were: J. F. Corkill, U. S. Borax & Chemical Corp.; J. F. Ingram, Ingram-Richardson Manufacturing Co.; W. H. Lowry, Vitreous Steel Products Co.; W. N. Noble, Ferro Corp.; W. T. Porter, Porcelain Metals Corp.; and Richard Powell, Whirlpool Corp.

To expand technical program

W. N. Noble spoke for a study committee consisting of John T. Gartrell, Mirawal Div., Birdsboro Corp.; A. J. Dirksen, American Potash & Chemical Corp.; W. H. Lowry, and Noble, in reporting on the findings of this committee, which has been studying the complete PEI program of activity.

A technical committee report stressed the need for a broadened technical program, and suggested that technical responsibility should be divided between engineers and management, with both represented at important meetings. A newly appointed technical committee is to consider the annual Shop Practice Forum program, a revitalized program of literature, additional work in the specifications field, and a program for the replacement of the technical activity at the Bureau of Standards, which will be discontinued after 1963.

Meanwhile, a "competitive materials committee" will be evaluating current competitive threats to such sections of the porcelain enameling industry as steel sanitary ware, refrigerator liners and other appliance components. Current research work now being conducted will assist in evaluations and comparisons with competing materials, such as plastics, etc.

It is estimated that from the standpoint of porcelain enamel frit usage the sanitary ware market represents about

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**PORCELAIN
ENAMELERS'
BURNING
TOOLS
CATALOG**

FERRO CORPORATION

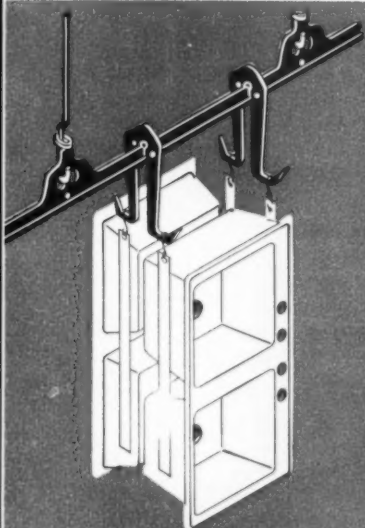
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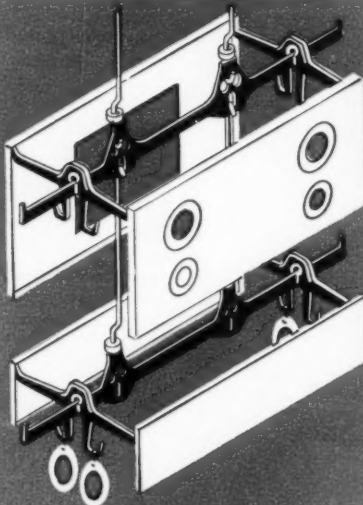
No matter what your porcelain product or process, you can realize a significant increase in production rate with five-factor designed burning tools by Ferro. From Ferro you get the benefits of engineering experience in all phases of porcelain enameling—from frits through final product.

This experience enables Ferro to intelligently consider the five factors that are the important difference in recommending standard fixtures, or designing specials. These factors are: weight, size and shape of part; type of furnace; firing temperature; rolled or cast alloy design; minimum-weight sections.

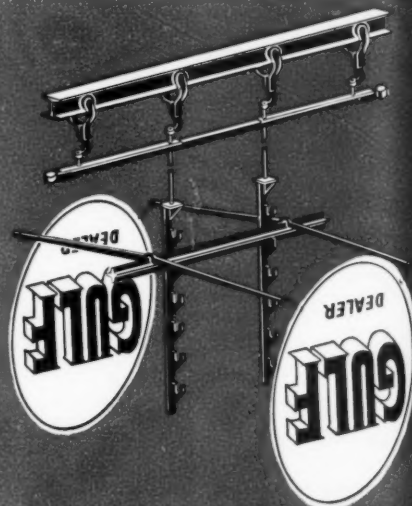
You can start planning today to boost production and reduce rejects by writing for Ferro's new Burning Tool Booklet. It details, individually, a large inventory of cast tooling patterns available.



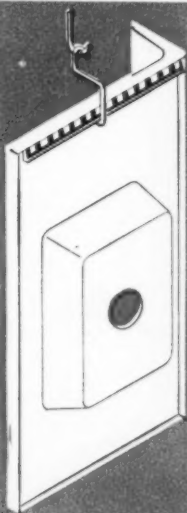
Heavy-duty suspension bar with adjustable coat-hangers, single or double-decking.



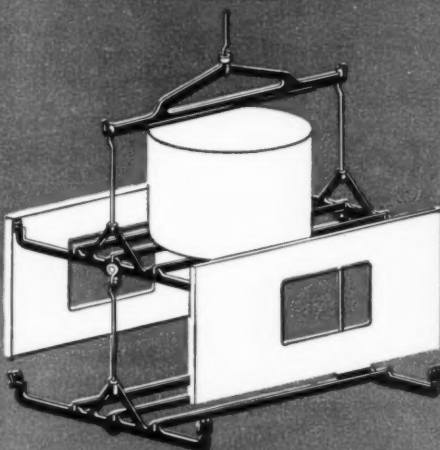
Lightweight suspension bar, 4-pt. coat-hangers, double-decked for variations in range parts.



Box furnace, slot-in-roof tooling, for large flatware.



Single-hanger hook, for sinks, one-piece fabricated units.



Special hanging fixture, for washer parts, adjustable for single or double-decking.



**FERRO
CORPORATION**

Engineering Division

4150 East 55th Street, Cleveland 5, Ohio



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Duo-Therm offers pre-wired, in-the-wall oil furnace

AN MPM DESIGN FEATURE

A PRE-WIRED AND READY-TO-INSTALL Duo-Therm oil furnace is designed to be installed quickly in a corner, against a wall, or recessed in a wall.

Duo-Therm, a division of Motor Wheel Corp., feels the unit is ideal for heating a new room in a home, a remodeled attic, an enclosed porch, a cabin, or offices, warehouses and stock-rooms.

Designated the 335E, the unit has a capacity of 60,000 Btu, and is said to be capable of completely heating 1500 sq ft. Installed in a wall, it requires a rough-in opening only 24 in. wide and 57½ in. high.

Although no ducts are normally required with the furnace, duct and register assemblies are available as optional equipment that can be installed on either or both sides of the furnace.

The furnace is controlled by a wall thermostat. In extremely cold temperatures, the "weather lever" on the oil control is set in the "cold" position, and the furnace cycles from low fire to high fire. Under normal conditions, the "weather lever" is set in the "mild" position and the furnace cycles from pilot to full fire.

Warm air is circulated by a 12-in., four-blade fan that is driven by a constant speed, 1100 rpm motor. The fan moves 650 cu ft of air per minute and is controlled by a blower switch which turns the fan on and off in response to the amount of heat being produced. The switch can be placed in the "manual" position, if desired, for continuous blower operation.

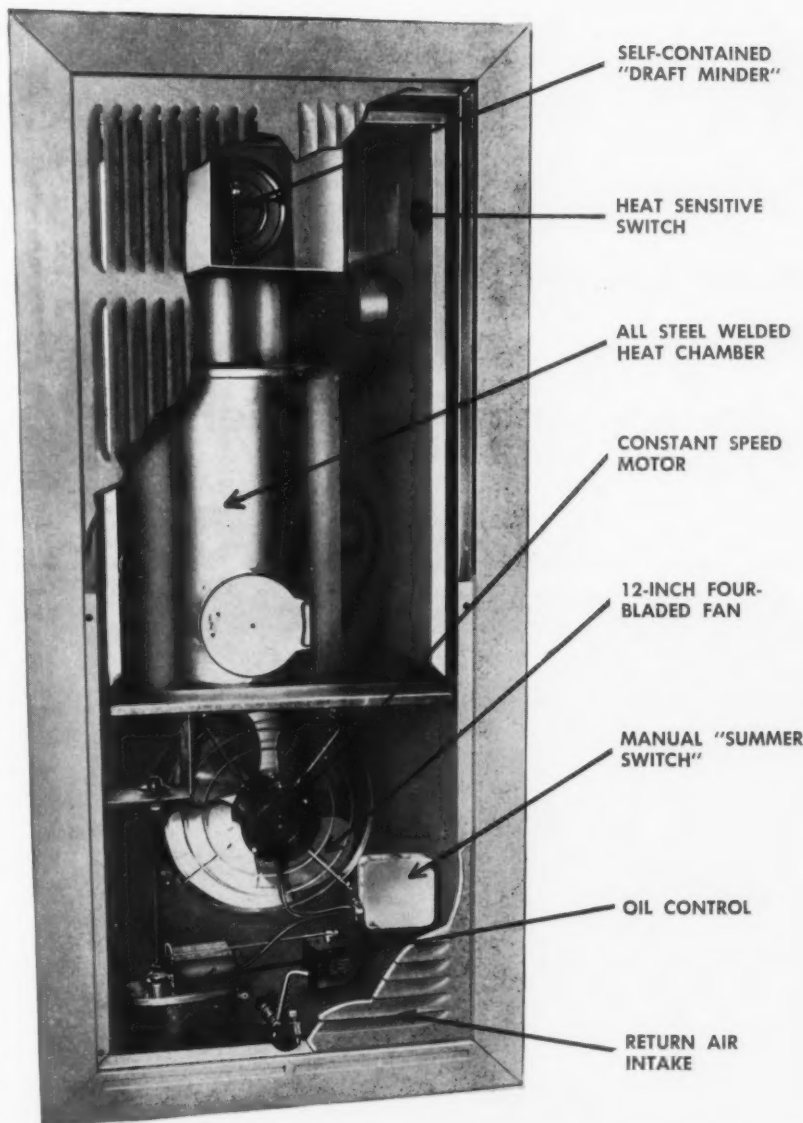
For installation, the completely assembled package requires only a two-wire connection to a junction box, a fuel oil connection and a vent hook-up.

Among the other features of the unit is a self-contained, factory pre-set "draft minder" for high efficiency with low draft requirements. Double-wall con-

struction of the cabinet insulates the heating unit from the wall and puts more heat into the room. An all-steel welded heat chamber is designed to provide quick pickup and transfer of heat to the home. Also, the burner is expanded into the heat chamber to form a single heating unit. **MPM**



"Golden Jet" burner on Duo-Therm 335E oil furnace provides a "full-floating mushroom flame."

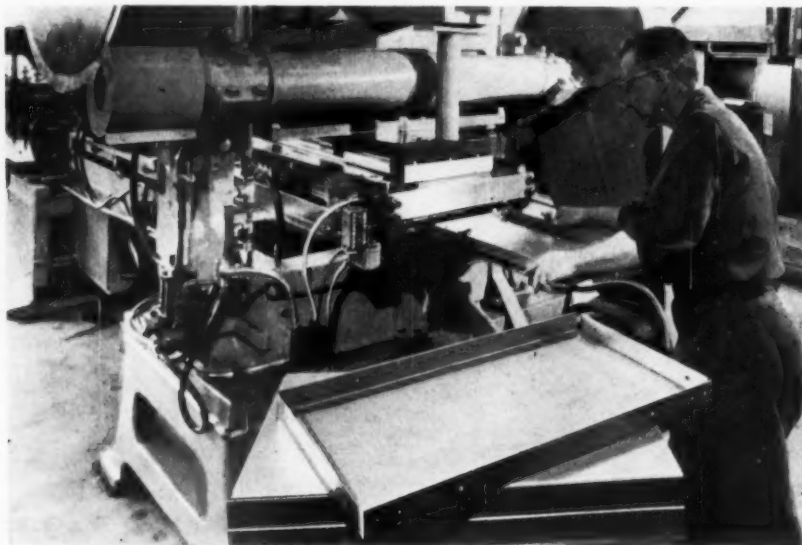




Taken out of the kitchen-utility area, the knock-down cabinets can be used as space dividers and wall-hung cabinets. Wood veneers and plastic are available as covering material.

How United Metal Cabinet fabricates "do-it-yourself" cabinets

Top or bottom panel for one of United Metal Cabinet's steel cabinets completes its forming cycle at the company's plant in Pottsville, Pa. Forming machine pictured performs roll forming, piercing and straight forming for cabinet sizes from 12 to 42 in. in width.



A LINE OF KNOCK-DOWN steel cabinets that can be assembled by one man using a screwdriver has been developed by United Metal Cabinet Corp., Pottsville, Pa.

Said to reduce the problem of shipping and warehousing, the cabinets occupy only about one-fourth as much shipping and warehouse space as is normally required by a fully assembled cabinet, the manufacturer says.

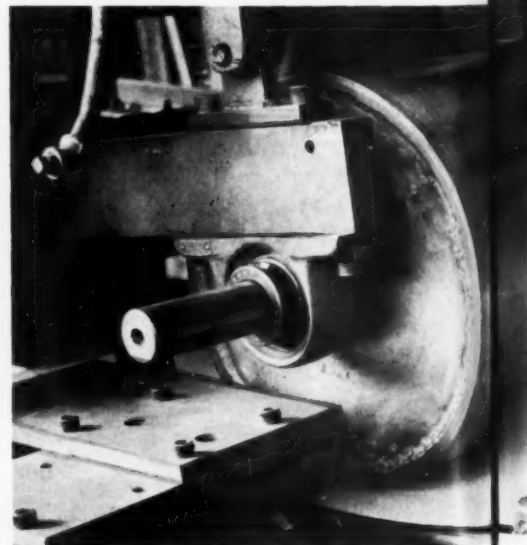
Production of the cabinets is carried out on an assembly-line basis. Coils of 22-gage cold rolled steel are cut to specified lengths and processed in equipment that combine roll forming, piercing and straight forming in a single sequence.

Counter tops are formed of 16-gage galvanized steel. The metal is coated with an adhesive and bonded to a composition top under pressure. The entire top is then blanked to receive sinks and counter-top ranges.

Cabinet sections then are packaged, together with wall brackets for hanging and materials for assembling, and are ready for shipment.

To simplify assembly, the cabinets are designed so that only two sizes of screws are required. Two long screws are used to fasten each bracket to wall studs. The remaining screws join the top and bottom of each cabinet to the

Composition surface material is bonded to galvanized steel sheets to form sink tops. Roller pressure is then applied to the sheet after composition material is coated with adhesive.





Kitchen counter top is prepared for blanking, which will make the top ready to receive sink and counter-range units. The counter top is part of the assemble-yourself cabinet line.

side panels and fix the cabinet door in position. Each cabinet is simply hung on its wall bracket.

The door panels of each cabinet contain space for veneer sections, wood or colored plastic. These sections are slipped into place during assembly, and can be replaced without removing the cabinet from the wall. _____MPM

PHOTOS COURTESY JONES & LAUGHLIN STEEL CORP.

A screwdriver and a little floor room are all that is needed for home assembly of the knock-down cabinets. Carton at right demonstrates the compact packaging of each unit.



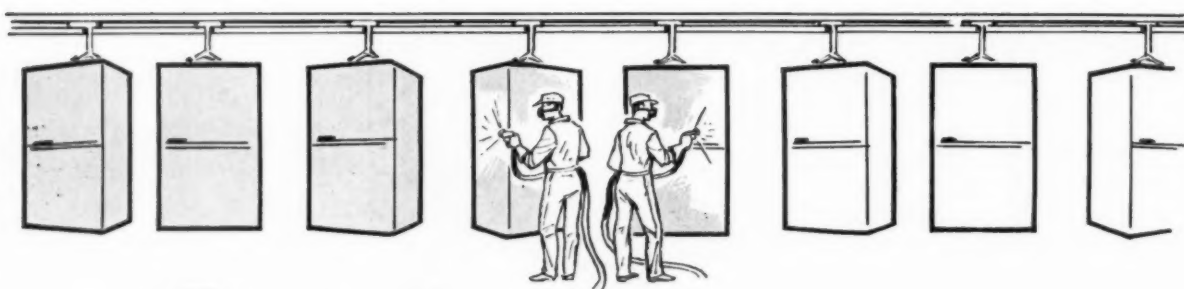
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AND DELIVERED



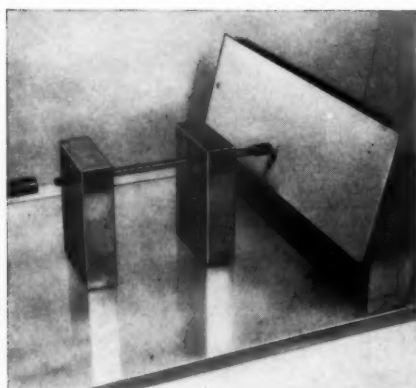
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Continuous register printing on metal coil has a bright future

RECENT DEVELOPMENTS in the close register printing of metal in coil form, with subsequent cutting and forming operations, appear to open new areas of bright promise. As sheet printing on metal approaches its limits, both technologically and market-wise, future progress in the art and marketing of printed metal may logically be concentrated on continuously printed metal strip.

At least this is the opinion of R. J. Kieckhefer, Jr., vice president, Litho-Strip Corp., Chicago, Ill., a company that has sizable investments in the equipment and technical know-how required for continuous register printing on metal.

Some of the current applications for the process include the decoration of housewares, toys, automobile instrument panels, oil filter cartridges, metal containers and closures, and other metal products. It is particularly well adapted wherever location of a change in color or composition in the finish is critical.

Basically, continuous coil register printing provides a means to synchronize the operations performed in the printing plant and the fabricating plant in which final forming is accomplished. It usually refers to printing with reference holes punched, or to register eye marks that can be picked up by photoelectric cells. The register control, in turn, governs the feed mechanism of the punch press or other tool employed in the final forming operation.

Metal printing has now reached a point of progress which might be compared to printing on paper after the development of the first practical web press. While the printing of metal sheets has been refined to a high degree, the process must now face the competitive fact that continuously printed metal strip and coil is a commercial reality. As in the printing of paper, the potential for high-speed printing and production economies makes the continuous process appear extremely attractive.

Advantages of register printing

Some of the inducements which lead to companies such as Litho-Strip Corp. making the necessary investment for register printing on coil stock include the following:

- Two and four-roll feeders may be used on punch presses to replace the conventional feeders required to handle sheet.
- A roll feed progressive die assembly may be employed with coil.
- A saving may be expected between the costs of a typical transfer die assembly and the cost of a typical progressive die setup.
- The typical progressive die assembly operating with roll stock may be operated as much as three times as fast as its transfer die counterpart.
- Coil stock may be used which has been processed through coil coating equipment for phosphatizing or other chemical surface treatment. At Litho-Strip, for instance, the metal surface is prepared by phosphatizing or other chemical treatment; then the base coat is applied; the printing completed; and a final lacquer coat applied—all in a continuous operation.
- It is also pointed out at Litho-Strip

that damage to light gage metal resulting from ejection and stacking of sheets can be eliminated, and waste margins minimized. These are some of the considerations which are pointed to as obvious reasons for going to register printing on coil stock.

Two methods compared

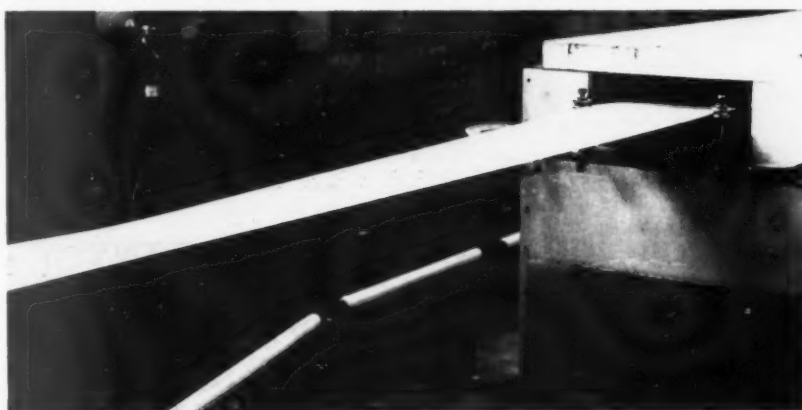
The *register hole method* affords more accurate register, and the error correction capability required of the punch press is very much reduced from that required when eye marks are used. The maximum error in this method is said to remain well within the error in the pin clearance in the progressive die. This method is particularly adaptable to use in progressive die operations where the strip between progressions is relatively stiff and corrections are correspondingly difficult to introduce.

The *eye mark method* is the less expensive method. It is adaptable to both large and small parts and, currently, is suitable for application where strip is employed that is much wider than the widest strip that can now be handled with the register hole method. Continuous printed strip in widths from one to 66 in. and repeat lengths up to 40 in.

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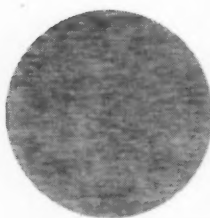
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Printed strip leaves oven at Litho-Strip's Chicago plant. It was printed by register hole method.

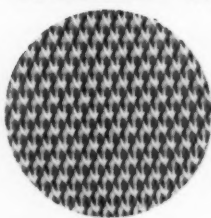




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may be used if register is maintained by the eye mark method, but the upper limit with the register hole method is currently 14 in. widths and repeat lengths up to 14 in.

While the eye mark method is probably best adapted to parts which are first blanked or cut off and then formed, it is by no means limited to these items. Progressive dies may be used with photocell equipment in many instances if forming tooling is designed to accommodate variable feed length in order to permit correction for printing errors.

Limitations to consider

As in the case of most technical processes, there are certain limitations to be considered currently in the application of register printing on coil stock. For example, it is pointed out that the capabilities of commercial photoelectric register controls and correcting devices for punch presses are often described without reference to errors that are inevitable in the printing itself, in the press feed, and in the dynamic response characteristics of controls necessary to compensate the other errors. When problems appear, the printing or the press feed are often blamed.

Kieckhefer points out that register printing on coil is sufficiently accurate today for highly satisfactory results in many applications for the manufacturer who understands the limitations of the method and sources and magnitude of possible errors, and designs his product to accommodate them. He feels that to conceal such limitations is to do a disservice to a technique that is already sufficiently refined for a large number of applications and one that is being constantly refined to accommodate work requiring tighter specifications.

Four chief sources of error

Kieckhefer lists the following as the four chief sources of error in printing:

- An error due to inaccuracies in the original drawing, plus errors introduced by the copying lens and the step-and-repeat mechanisms on the camera, plus an error due to shrinkage in the transfer film during processing. The composite effect of these inaccuracies is that, in a first quality commercial printing cylinder, allowance must be made for a positioning error of about one part in 1000 with a lower limit between .010 and .015 in. This means that any point on a cylinder 5 in. in diameter and 15 in. wide can be expected to fall within .015 in. of its exact theoretical location. Allowable error is correspondingly greater for larger cylinders.

This composite error appears both lengthwise and crosswise in the finished product as a cyclical error repeating at a frequency equal to the number of patterns around the printing cylinder. It is relatively easy to detect and measure because of its reproducibility and short period.

- An error due to mechanical tolerances in the equipment that meters the strip to the printer, including creep on feed rolls, and changes in strip length attributable to variations in tension and temperature. This appears as a cumulative error in repeat length and amounts to an inaccuracy of about one part in 1000. This error is relatively constant and appears always in the same direction and parallel to the travel of the strip.

- A random error due to variations between strip speed and printing plate speed and traceable to slip in the printing press infeed, gearing errors and backlash. This error, always parallel to the strip travel, is of the order of one part in 500.

- An error in printing placement across the strip due to guiding (tracking) error and camber in the strip. This will amount to an inaccuracy of about plus or minus .015 in. on flat strip, but can be much greater if there is a marked camber in the strip.

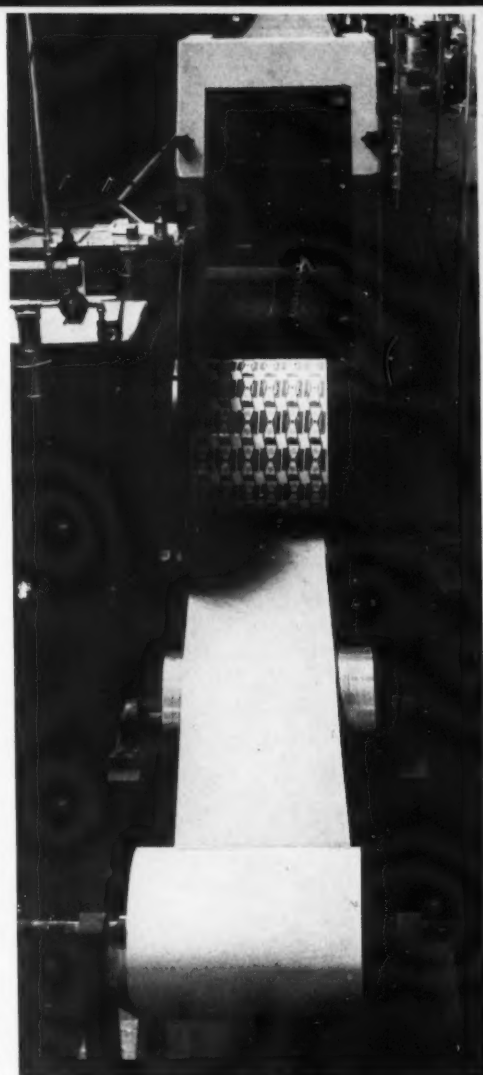
Cumulative effect of the several printing errors will, of course, follow a normal distribution curve. In a typical job with a maximum total positioning error of about .030 in., the composite error will average about .010 in., with about 75 percent of the work printing to accuracy within .015 in.

The choice of the register control required on the punching or forming equipment is affected also by the rate of change of error. While it is theoretically possible for a pattern to shift from plus .030 in. to minus .030 in. in one repeat, this result is statistically improbable. The capability to correct half of this error is probably sufficient in all but a very small number of cases.

Occasionally the designer assumes that printed strip is available that is so accurate it may be run into a punch press without register control. Consideration of the errors already described and their sources indicates how impractical is this assumption.

Punch press register controls

Punch press register controls operate on a variety of principles, which may be considered here only insofar as they affect the correction of printing errors. In general there are two types in common use today. One compares a signal



Strip is recoiled at end of printing line. Paper strip in foreground is coiled with metal to prevent scratching.

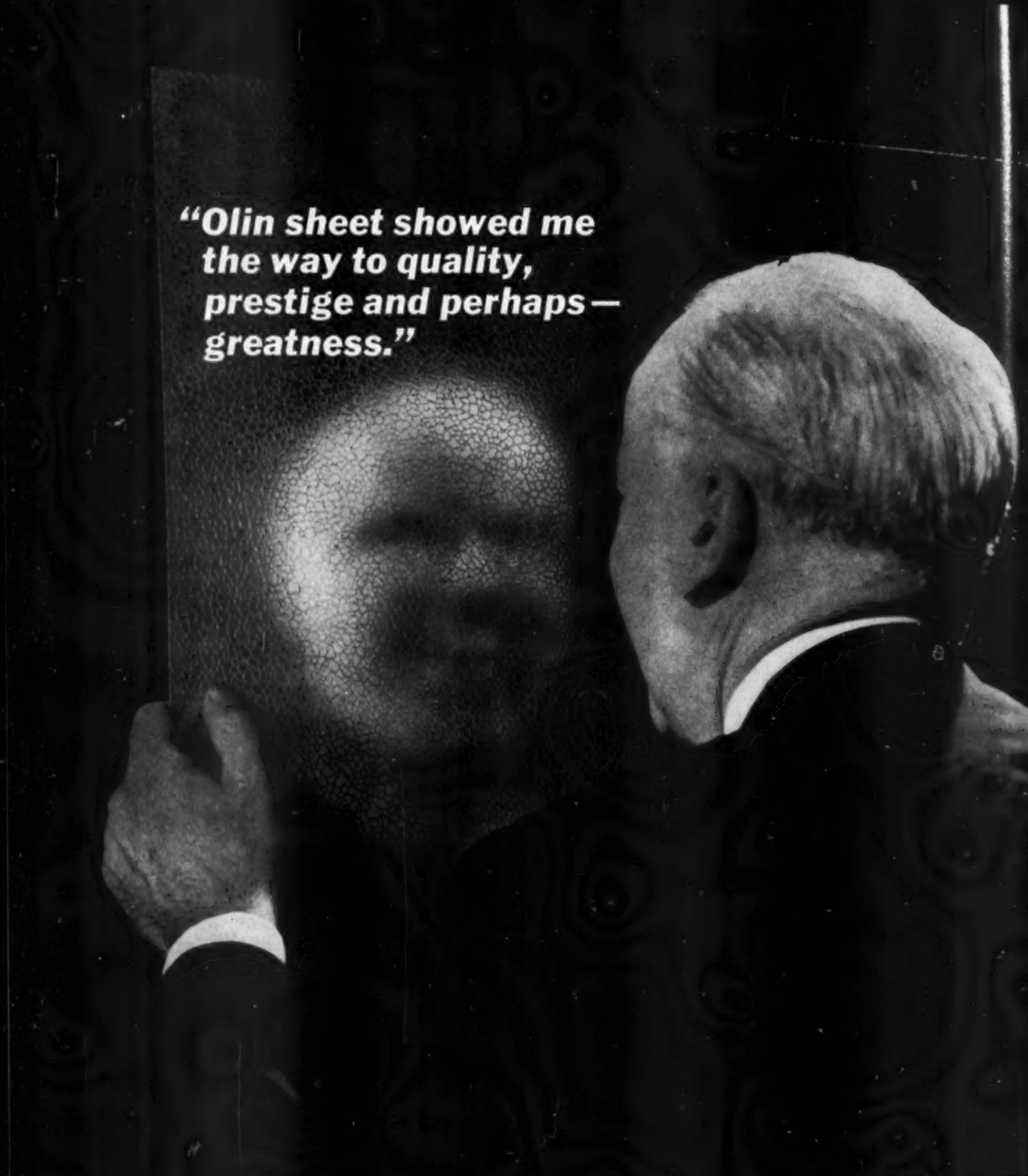
MPM PHOTO

from a photocell and corresponding amplifier, during the feed stroke, with a timed signal from a rotary switch turned by the punch press. The other measures output of the photocell, while the feed is stopped, and compensates before or during the next stroke.

In punch press register, Kieckhefer outlines three classes of error to be considered:

Error due to limitations in the sensitivity of the photocell, which is common to all systems, and its associated amplifier. This is due, in turn, to: color and reflectivity of the base coat; instability of the voltage source; intensity of the ambient light visible to the cell; and several variables associated with random transients, electrical noise and other variables, such as time and temperature, in the electrical circuitry.

In addition, photocells currently in use are more sensitive to one color than



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to another. For instance, a unit that responds to a ten percent change in red light with a one volt change in output may produce only 1/10 of a volt change in output in response to a ten percent change in blue light.

The basic problem here stems from the fact that, at best, scanning heads project a relatively large area of the strip onto the photocell in proportion to the magnitude of the error to be controlled, and the cell responds to the average intensity of the light reflected from the entire area. Anything that changes the amount of light reflected will change the point at which the cell reacts to the edge of the eye mark.

Obviously no discussion of the actual amount of error has any significance without reference to an analysis of the variables that pertain in the particular system under consideration.

Error attributable to timing switches. Analyses by oscilloscope have often revealed surprisingly large errors from this source. Commutator-type timing switches frequently show a relatively sluggish rise or fall in voltage with rotation, due primarily to brush resistance. The control equipment, in these instances, is thus required to compare two gradual voltage changes that take several times as long to reach completion as does the movement of the strip across the error which is to be measured.

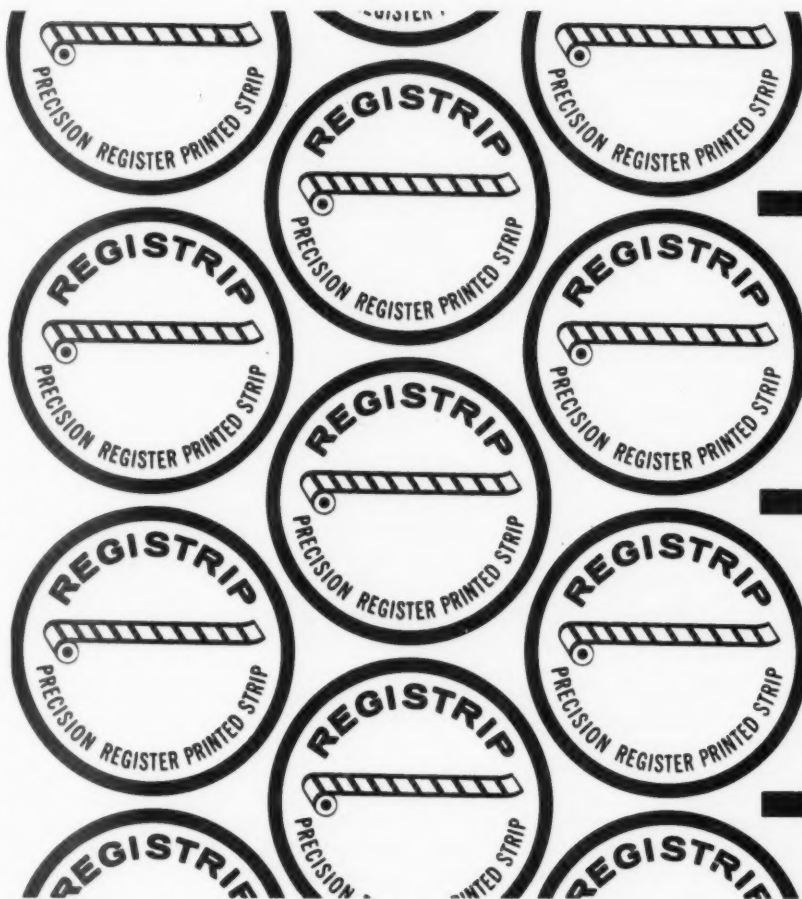
Contact switch-type timing units introduce similar errors, due to varying switch transit time, contact bounce and mechanical backlash.

Errors introduced by the error correction device itself. Most units either correct a fixed length or make a rough attempt to make a correction approximately equal to the magnitude of the error. In either case, allowance must be made for an appreciable null area.

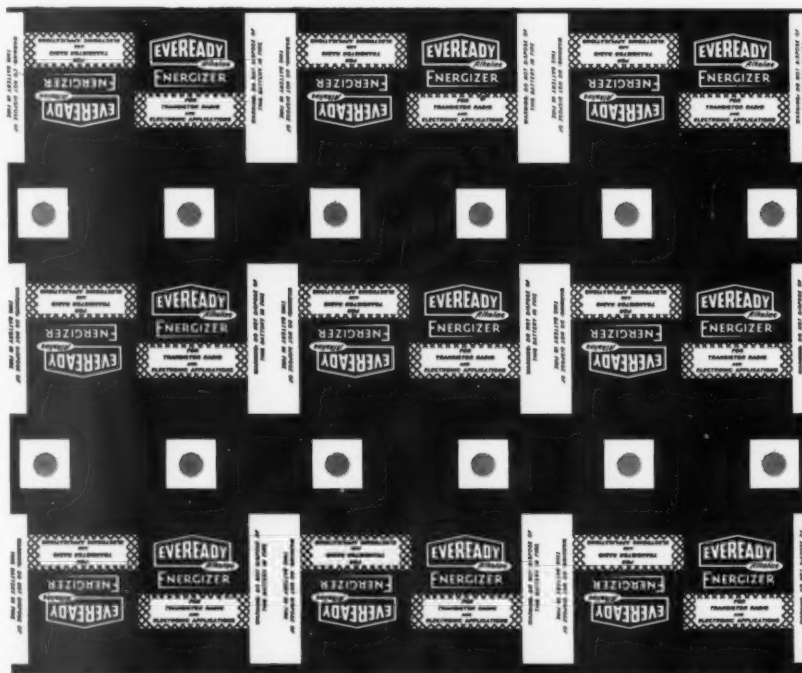
For example, if an error of .030 in. maximum is to be expected and corrected with a fixed length device, a null area of about plus or minus .015 in. must be allowed in order to prevent the unit from over-correcting a small error.

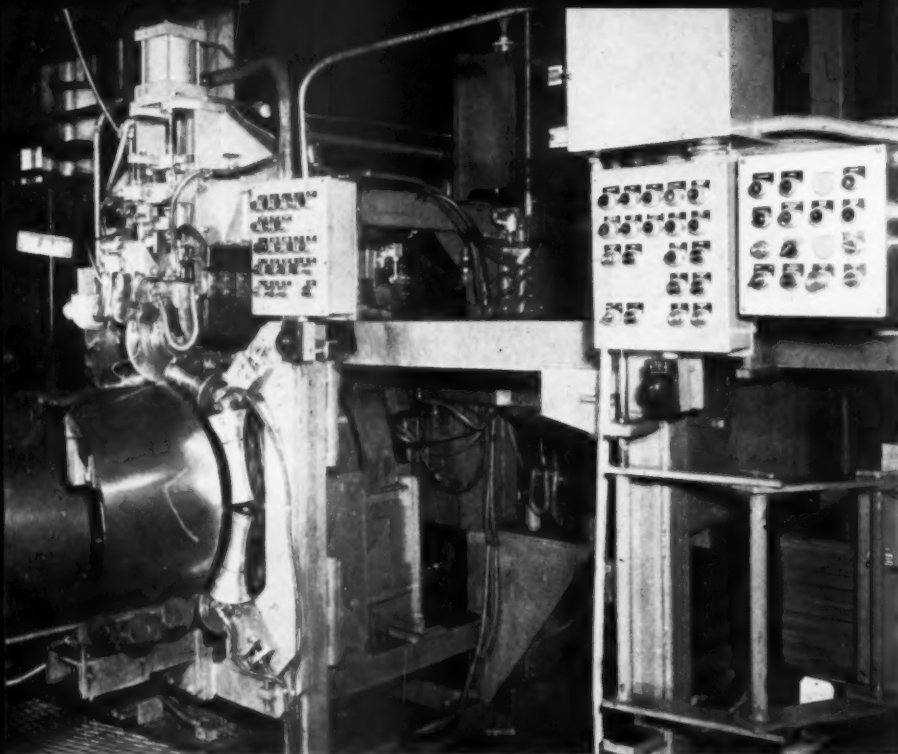
It is pointed out that there is urgent need in the industry today for better means of measuring actual error and for correcting by just the amount of error measured.

Properly used, register printing combined with photoelectric controls appears to offer substantial economies available by no other means. To realize these benefits, a study of the errors involved and their analysis should precede every job—and the initial art work and part should be designed with the method and the errors in full focus.



Two types of close-register printing are shown. Register-hole method (which is represented by sample below) uses register holes, which are shown as gray areas, as reference points for the feed mechanism of the punch press or other tool employed in the final forming operation. Sample above utilizes the eye-mark method. The marks (on edge of strip) are picked up by photoelectric cells of the forming equipment feed mechanism.





First, flat blanks for cylinders are fed by a vacuum cup shuttle from the stack (right), and through forming rolls into the welder. A mash seam is produced at overlapping edges as the cylinder is guided by hourglass rolls and then released onto the track (left).

AN AUTOMATIC FABRICATION LINE at Whirlpool's Marion, Ohio plant turns out cylinders for clothes dryers at a 300 per hour rate. Starting with cold rolled steel blanks, the automated equipment rolls the sheet, welds the seam, expands the cylinder to its exact diameter, forms flanges, and draws three baffles in the cylinder.

Only one man is needed to check the

operation of the entire line, and no manual handling of stock or parts in process is required.

Operations along the new line resemble those employed formerly but the automation and some other equipment are new and effect marked economies.

In the new line, stacks of flat strip measuring 16 by 86 in. are loaded into a feeder. A magnet fans out strip edges

How flat blank becomes dryer cylinders

fabrication line at Whirlpool
forms, seam welds, expands

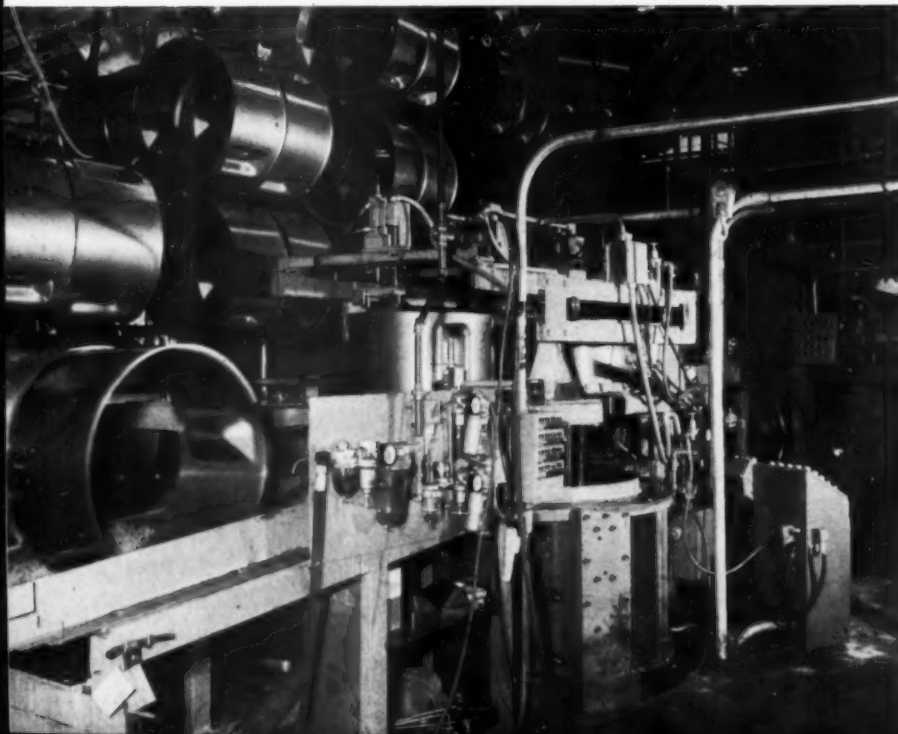
so that vacuum cups on a shuttle above the stack pick up one strip at a time and avoid possible double loading of the combination roll and welder. Each strip, released onto rollers after being advanced by the shuttle, is fed into a set of three rolls that form the strip into a cylinder with a slight overlap at the two ends.

This overlap is always at the top and is positioned precisely between the two rolling electrodes of the mash seam welder. They make the seam as the cylinder is moved between the wheels and reduce the double thickness to slightly more than that of the 22-gage stock employed. Rolls of hourglass shape guide the cylinder until the seam is completed, after which the weldment is released onto a track where rubber rollers advance it automatically into the rocking cradle.

An air operated clamp is then lowered to hold the cylinder to a track extension of the cradle as the latter is rocked 90 degrees. In so doing, the cradle elevates the cylinder and places it with axis vertical onto a shuttle carriage on a track for advance to the expander. This shuttle is timed to load the expander. On the way to the latter, the cylinder is sprayed automatically with drawing compound. As soon as the cradle releases the cylinder just elevated, the work piece is unclamped and the cradle is rocked back to pick up the next cylinder.

Much of the expander, including dies

Fourth, an expanded cylinder already flanged and with baffles drawn is shown at left rolling down an incline. Cylinders in horizontal position and already loaded onto the conveyor hooks (at top) are on their way to cleaning, phosphatizing and painting.



k become s automatically

expands, draws and flanges

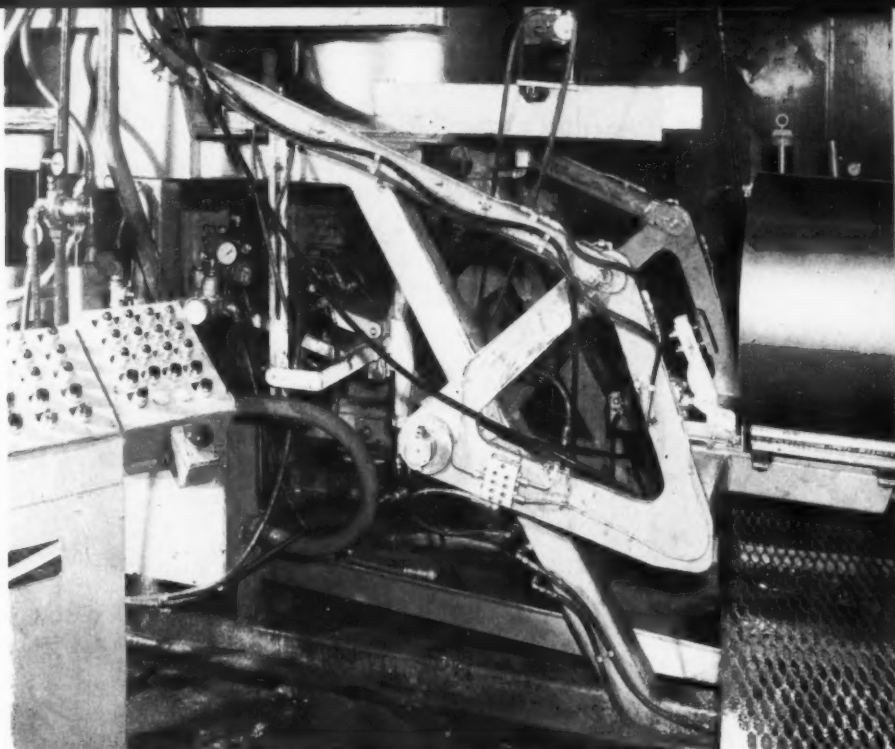
that form the cylinder baffles inwardly, is below floor level. One part of the expander is an elevator that is in top position when loaded and is then lowered, bringing the cylinder to forming position. When so located, the central portion of the machine expands, stretching the cylinder to desired diameter and producing narrow outward flanges along top and bottom edges.

Punches then are moved radially inward and draw the three baffles into inner die recesses. This completes the expander functions and its dies are moved inwardly as punches retract outwardly, after which the elevator moves up and stops at the level for unloading and reloading.

As the next cylinder is advanced to forming position, it pushes the one just formed along a shelf and out onto a short incline. The latter is so shaped that the formed cylinder is dropped so that its axis is horizontal. Then, the cylinder rolls down a sloping channel to a stop. There, each cylinder is hung manually on a conveyor chain hook and is advanced through cleaning, phosphating and finishing operations.

Only one man is needed to check the operation of the entire line. Each machine is loaded, operated and unloaded without any attention unless troubles arise. All equipment is interlocked to operate in fixed sequence with adjacent equipment, and safety controls effect au-

Third, a cylinder that has been expanded, flanged, and had baffle recesses drawn, is shown here partly elevated on its way to ejection position. In a carriage at upper right, the next cylinder is about to push the one coming from the expander off the elevator.



Second, each cylinder advanced onto this cradle is clamped and then rocked 90 degrees, bringing its axis vertical as the cylinder is delivered into a shuttle. During advance to the expander, the cylinder is sprayed with drawing compound.

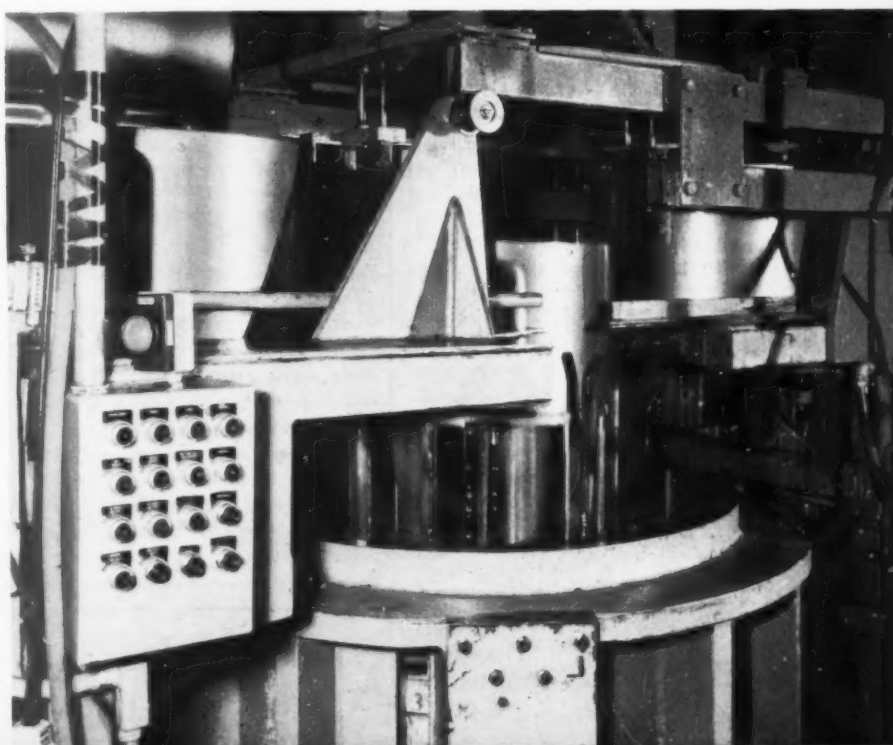
tomatic stops if malfunctioning occurs.

At the end of the line a helper transfers finished cylinders to an overhead chain conveyor. It is also necessary for a fork truck operator to move a new stack of blanks into the loader when the prior stack runs out but this takes little time.

In the former setup, all loading and some unloading of the equipment were done manually and more space was re-

quired. Naturally, the automation involved considerable new investment but the savings realized are ample to amortize the new equipment installed.

MPM is grateful to Whirpool's Richard Coleman, manager of tooling and process engineering, and Henry Kowalski, manager of fabrication and finishing, for technical assistance in the development of this feature.



Roper elevates one-coat, direct-on porcelain enameling to production status

extended pickling cycle only modification required in existing finishing system



(Left) — Robert Forth, Roper's ceramic engineer, explains details of the company's one-coat, direct-on porcelain enameling program.

MPM PHOTOS

(Right) — Jack F. Radford, factory manager, displays range side panel which has been finished by the firm's one-coat process.



AN MPM STAFF FEATURE

ONE-COAT, DIRECT-ON porcelain enameling has matured into an established finishing technique at the George D. Roper Corp.

Since February of this year, all side panels on ranges produced by the Kankakee, Ill. firm have been finished by the one-coat, direct-on process. This represents close to 60,000 ranges and 20 percent of the white porcelain enamel finishing. The side panels are also one-coated in coppertone.

Roper's conversion to one-coat finishing of the side panels required no new investment in equipment or facilities. With the exception of an "extended" pickling cycle, no modifications in the existing enameling system were necessary. The enamel, in slightly heavier application, is identical to that used over ground coat for two-coat processing.

Much of the success of the one-coat program is attributed to the "zero-carbon" enameling steel. The 20 and 22-gage stock, with a carbon content of about .003 percent, is credited with the elimination of boiling and fishscaling problems.

An acceptance rate of 84 to 88 percent of the one-coated ware after first

fire while maintaining opacity and full whiteness has convinced the company that the process is acceptable from a quality standpoint. This acceptance rate is close to what Roper experiences with its conventional two-coat finishing.

Five-year project

Although Roper's work with one-coat, direct-on porcelain enameling goes back to the mid-1940's, preliminary work

which led to the acceptance of the current program began about five years ago. Five-hundred 30-in. ranges were put into the field with side panels, doors and front panels finished by a phosphate treatment, one-coat process.

The ranges were sent to New Orleans, Texas, Florida and other areas where moisture problems exist. Regular checks by factory personnel throughout the five-year period revealed no problems

In the last 18 years this magazine has published 16 articles dealing with one-coat porcelain enamel applied directly to steel.

The first issue (January 1944) carried a resume of opinions from key technical personnel of frit and steel suppliers. Ten years later, March 1954, the same men, or men in similar capacities, were again asked to present their views on the subject.

One of the first case histories giving a progress report on actual plant operations came from the Geo. D. Roper Corp., then of Rockford, Ill. Roper and Westinghouse were among the early companies to carry out extensive experimental work and to put one-coat, direct-on appliances in the field. Much of this early work was done with premium-price, titanium-bearing steel. The fairly recent introduction of "zero-carbon" enameling stock has given the one-coat movement new momentum.

The accompanying article featuring operations at Roper (formerly Florence Stove) of Kankakee, Ill., is a case history describing the use of a conventional sulphuric acid pickling process with the principal variation being extended time.

While some plants might find an extended pickling cycle incompatible with other production considerations, we feel the Roper case history will be of interest to all porcelain enamellers and of practical value to many.



Conventional spraying system is used for one-coat work. Here, edges of panels are sprayed prior to automatic spraying in the next booth.

connected with the one-coat finish. General appearance, breakage, chippage and rust were the main items investigated in the inspection trips.

Encouraged by the positive reports from the field, a limited production run of one-coated side panels started in September 1960 using the then relatively new "zero-carbon" steel. Side panel finishing went to one-coat on a full-scale basis in February of this year.

Pickling details

The pickling unit currently used for both the one-coat and two-coat work

Pickle Cycle for One-Coat, Direct-On Finishing at Roper U-Type Pickling Machine

| OPERATION | TIME (in minutes) | TEMPERATURE | TANK CAPACITY (in gallons) | CONCENTRATION |
|-------------------------------|----------------------|-------------|----------------------------------|--|
| 1. BOILING WATER RINSE | 3 | — | 1000 | — |
| 2. ALKALI CLEANER | 3 | boiling | 1000 | 8 oz/gal |
| 3. ALKALI CLEANER | 15 | boiling | 4600 | 8 oz/gal |
| 4. OVERFLOW WATER RINSE | 1½ | — | 500 | — |
| 5. ALKALI CLEANER | 15 | boiling | 4600 | 8 oz/gal |
| 6. OVERFLOW HOT WATER RINSE | 1½ | — | 500 | — |
| 7. OVERFLOW COLD WATER RINSE | 1½ | — | 500 | — |
| 8. SULPHURIC ACID PICKLE | 24 | 163-175 F | 10,000 | 7-9% |
| 9. OVERFLOW COLD WATER RINSE | 1½ | — | 500 | — |
| 10. OVERFLOW COLD WATER RINSE | 1½ | — | 500 | — |
| 11. NICKEL SULPHATE | 6 | 150-165 F | 2000 | 1½-2 oz/gal pH: 3.2-3.5 |
| 12. NICKEL SULPHATE | 9 | 150-165 F | 2000 | 1½-2 oz/gal pH: 3.2-3.5 |
| 13. COLD SULPHURIC ACID RINSE | 1½ | — | 500 | .3-.4% |
| 14. NEUTRALIZER | 6 | 135 F | 2000 | caustic soda: 1/8 oz/gal sodium cyanide: 1/5-1/4 oz/gal |
| 15. NEUTRALIZER (COMMERCIAL) | 6 | 135 F | 2000 | 1/4 oz/gal |
| 16. DRYING | 13 | — | — | — |

was purchased about five years ago. Provisions for additional tanks or increased cycle times were built into the equipment as purchased. With the current one-coat program, it has only been necessary to extend the pickling time; no equipment has been added.

It was determined that metal removal by the sulphuric acid pickle should be a minimum of two grams per sq ft, and that the nickel deposition should be a minimum of .08 gram per sq ft.

To find the correct combination of

cycle speed and solution temperature, the cycle speeds were set as low as possible and test samples of the "zero-carbon" enameling stock were run through the pickling-nickel flash cycle. Temperatures of the sulphuric acid and nickel bath were then adjusted until the minimum requirements of iron removal and nickel deposition were met.

By this method it was concluded that the temperature of the sulphuric acid solution should be 163 F. After 4 to 12 hours of operation, the temperature is boosted in 3-degree increments to 175 F to maintain the 2 gram per sq ft iron removal rate. When this falls below the minimum at 175 F (generally after about 120 hours of pickling) the tank is emptied and recharged.

The nickel flash solution is operated initially at 150 F, to a maximum of 165 F. When a standard Porcelain Enamel Institute check indicates that the bath is not depositing sufficient nickel on the metal, the tank is emptied and recharged. The only additive used in the nickel tank is a small amount of sulphuric acid to adjust the pH, which is held between 3.2 and 3.5.

Concentrations in both the pickle and nickel tanks are identical to those used for conventional two-coat production: 7 to 9 percent sulphuric, and pH in the nickel tank of 3.2 to 3.5. This allows simple changeover to conventional pickling for two-coat work.

Roper's production scheduling is not hampered by the increased pickling time. This does not mean, however, that

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PHOTO COURTESY
GEO. D. ROPER CORP.

Since February of this year, all side panels for Roper ranges have been finished by the one-coat process. The thinner coating made possible by the new system has considerably reduced damage in assembling ranges.



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(Left) — Following drying oven, panels are removed from conveyor and hung on overhead conveyor leading to furnace. (Above) — Forth demonstrates regularly conducted deformation test on range panel.

MPM PHOTOS

the system would be suitable for all plants. No doubt faster pickling (possibly employing other materials) would be preferred in some cases. It is apparent that this matter must be resolved on a plant-by-plant basis.

Material selection

Although several types of frit were used in experimental runs, Roper engineers ultimately settled on the same titanium-bearing frit that is used in two-coat work. Pickup is increased slightly in the one-coat work.

Standard application of ground over cover coat at Roper is 23 grams per sq ft. In one-coat spraying, the application is held between 28 and 30 grams per sq ft. Coppertone, which is the only color the company has found acceptable for one-coat work, is applied at a rate of just under 28 grams per sq ft. This is approximately three grams less than is applied as cover coat in conventional enameling at Roper.

Firing temperature for the one-coat ware is 1490 F for 3 minutes, 20 seconds, compared to a normal firing temperature of 1475 F in Roper's two-coat production.

One-coat benefits

Harold Jeske, Roper executive vice president, sums up the company's feelings on the current one-coat, direct-on program in the following way: "From the standpoint of quality, we are very

much impressed. The factory group is extremely pleased with the process because damage in assembly has been considerably reduced because of the thinner coating. In-transit damage has also been cut. There has been some degree of cost reduction, and we are confident that eventually even more savings will be realized."

Obviously, the slower pickling cycle somewhat increases metal preparation costs. However, savings are achieved by the elimination of labor and material required for ground coat. Further economies are gained in production of white side panels because corner brushing is not required.

All factors considered, the company estimates that total savings realized by the one-coat process approximate 13¼ cents per sq ft. And, as Jeske points out, the company expects this figure to rise as the process is further refined.

Jack F. Radford, factory manager, is looking ahead to the day when automation in one-coat porcelain enameling will make possible even greater economies. "One-coat enameling opens up to our industry an approach toward complete automation of handling," he says. "You don't have the intermediate stop for ground coat; it should be feasible to mechanically transfer ware from pickle to spray line, from spray line to dryer line, and from the dryer line to the furnace line without physical handling."

Maintaining quality

In spite of the excellent acceptance rate of 84 to 88 percent after first fire, Roper management is not relaxing quality control measures.

One of the important techniques in addition to the standard quality control system is a regular program of field investigation. Representatives from Roper's production staff, inspection department, field service group and product engineering department make regular trips to four cities — Chicago, Detroit, Philadelphia and Dallas — to check on field service problems, including any that may occur with one-coat porcelain enamel.

On the production end, quality control measures include frequent pickle solution tests with 4 by 8-in. control samples that are weighed before and after pickling to check the steel removal rate. Standard PEI deformation tests are also conducted, plus a visual examination of the bond. To check the soundness of the bond on radii, considerable chipping is done. The company has found that a good bond is characterized by a black or gray ring at the interface of the fracture. On the other hand, a poor bond is indicated by an "exceptionally shiny" area at the fracture point.

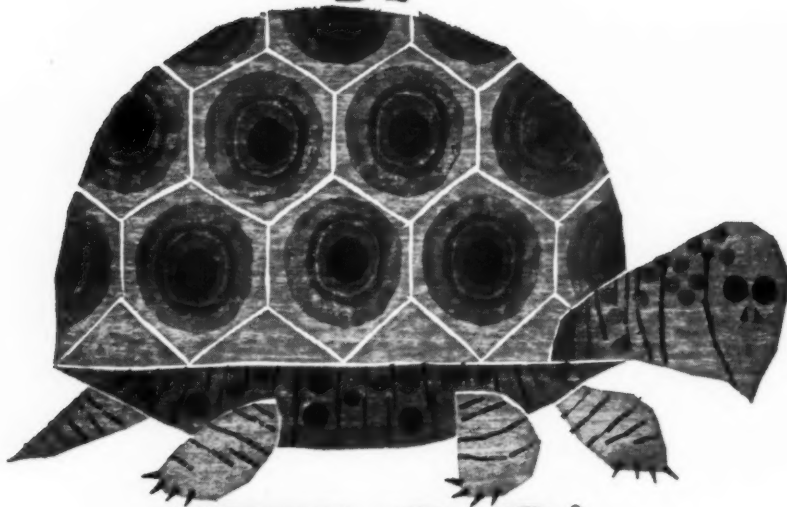
A few words of caution

Since the use of one-coat, direct-on porcelain enameling is a relatively new production technique, there are still a few touchy areas that require close attention.

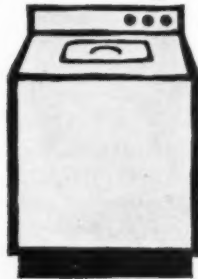
One phase of the operation receiving close supervision is rework. Line opera-

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Editor's mail

→ FROM PAGE 25

additional information be available from the Air-Conditioning & Refrigeration Institute? How can I contact that organization? Any help you can give me in locating sources of information which will help me determine growth in demand, general marketing policies, the number of manufacturers, and future prospects for the industry as a whole will be greatly appreciated.

William F. Reiser
Chief Industrial Engineer
All-Steel Equipment Inc.
Aurora, Ill.

In answer to Mr. Reiser's request, we are enclosing reprints of our Appliance Forecasts Section and our Annual Statistical Review. We are sure that the Air-Conditioning & Refrigeration Institute can provide more detailed information, so we suggest writing to the following address: Air-Conditioning & Refrigeration Institute, 1346 Connecticut Ave., N. W., Washington 6, D. C.

The Editors

Creativity multiplied

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Survey verifies program

Under the present system, a designer encountering a fastening problem which can be satisfied by the application of a machine screw refers to the published standard. To verify the practicality of the standardization program, a survey, which traced the parts selection and specification step-by-step (See Fig. 2), was conducted in the engineering department of one of the company's major divisions. It was proved, by the minute-to-minute tabulation, that the designers could greatly reduce the time and effort needed to find the proper component by using the standards list.

Another time saver, and one the survey did not consider, is the reduction of testing time required to verify the performance and reliability of non-standard components. With standardized components, often the only tests needed are those in conjunction with the overall testing of the design prototype of pilot model of a new product.

Standardization has proved its worth. By the effective use of standardization programs, industry will get a better return on its engineering dollar by documenting solutions to the routine matters, thereby freeing the technical man for more creative tasks.

MPM STANDARDIZATION SERIES POLICY: It will not be our plan to use information which would tend to stifle improvement of products or logical model changes which offer the end product purchaser added use value. MPM

AHLMA committee sees service improving

HOME LAUNDRY EQUIPMENT SERVICE is improving. Better service training, higher product reliability, a trend toward simplification, and increasing recognition of the service problem at the design level are some of the main reasons.

These are the feelings of men who specialize in the service phase of the home laundry industry — members of the Parts and Service Committee of the American Home Laundry Manufacturers Association. The group answered questions on service at a press conference following a recent meeting in Chicago.

W. B. Creech, manager of Westinghouse's Appliance Service Div., was named new chairman of the committee, replacing John Danielson, corporate product service manager for Whirlpool.

Although all questions were answered on an individual company basis, it was obvious that an industry-wide consensus exists on the point that washer-dryer service has made worthwhile strides.

It could be argued that this would not be a startling conclusion coming from a group of men whose responsibility is good service. But the conclusion is apparently not a product of "wishing it so makes it so."

The committee members generally agreed that more attention is being paid to service at the serviceman level. They referred to an increasing number of training programs and a continual effort to keep service manuals and other help-

ful literature on service up-to-date.

One member pointed out, however, that in some instances it is still difficult to get service personnel to *read* and *use* the service manuals that are provided. But efforts by most companies in this area are paying off.

Another major point was that service considerations are receiving more attention now at the original design level. One committee member pointed out that representatives from the service department are being called in for consultation in the early design stages of a new piece of home laundry equipment. Others pointed out the trend to easy accessibility in many lines of home laundry appliances.

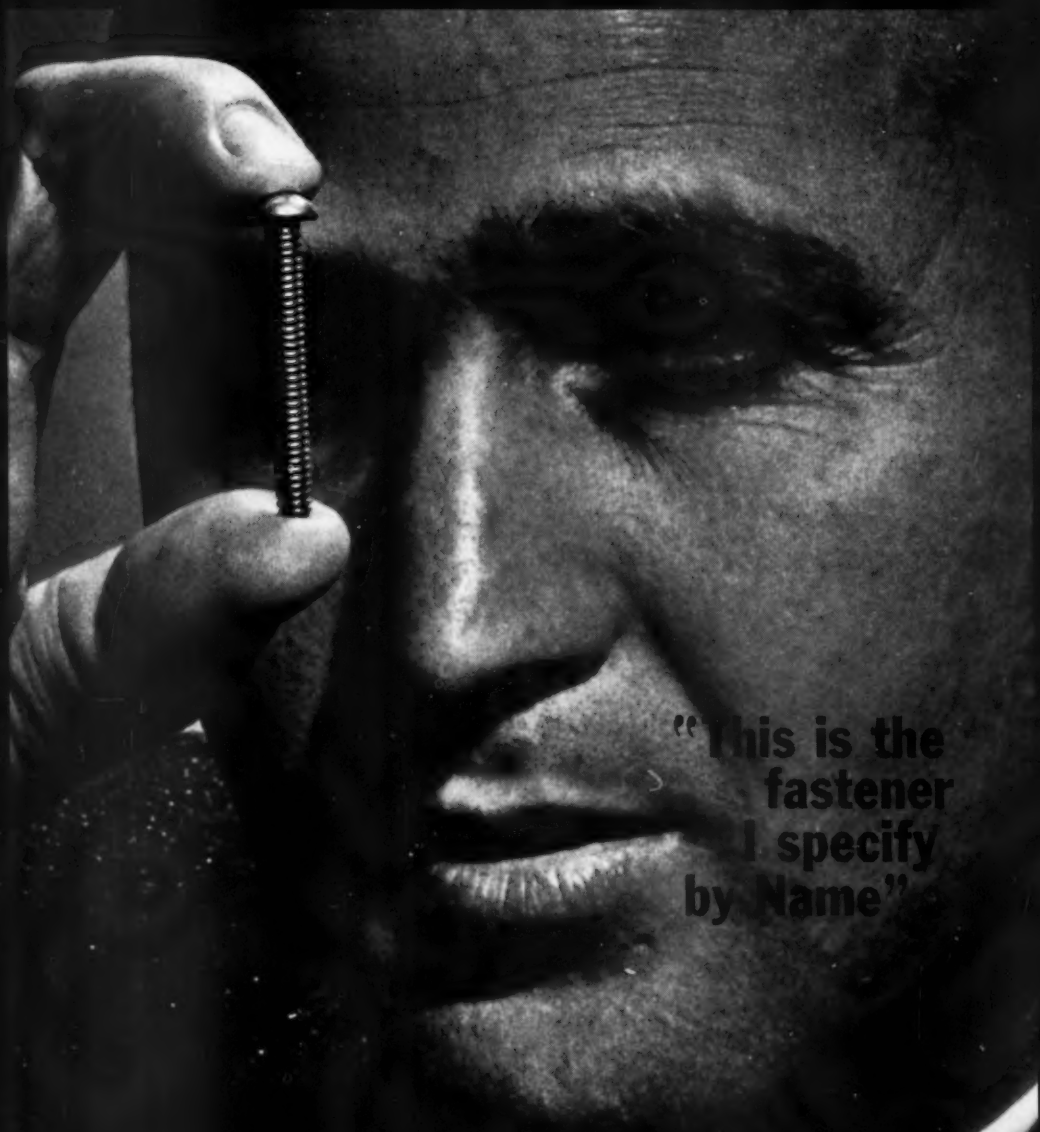
Other factors which were mentioned as causes for optimism in the service picture included simplification and interchangeability (standardization). The big job in simplification programs, it was brought out, is to make the machines simpler and reduce the number of parts required while retaining the machine's ability to carry out a variety of automatic functions.

The standardization principle has likewise contributed to improvements in service operations, both by improving the reliability of the equipment and making the replacement part system more efficient, it was generally agreed. The fact that more can probably be accomplished in this direction was endorsed by most committee members.

AHLMA Parts & Service Committee members discuss status of home laundry equipment service at Chicago press conference.

MPM PHOTOS





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Westinghouse speeds up distribution and service

TOP BRASS of the Westinghouse Consumer Products Group and Major Appliance Div. met with the press at the company's Columbus headquarters on September 28 to demonstrate what Westinghouse is doing to further the interests of the appliance industry, in general, and specifically the Westinghouse appliance picture.

Included in the executive group meeting with the press were Chris J. Witting, vice president, Consumer Products Group; John W. Craig, vice president, general manager, Major Appliance Div.; John J. Anderson, marketing manager; L. W. Smith, merchandise manager; Mark J. O'Friel, executive assistant to the vice president; W. J. Delaney, operations manager; W. B. Creech, manager, product service; John Knox, manager, marketing administration; Frank Ford, manager, business systems and methods; and R. T. Killian, manager market planning.

New emphasis on market research

A demonstration of the market research techniques behind the 1962 products which are now in production (refrigerators, freezers, dishwashers and room air conditioners in Columbus; and

washers, dryers, and ranges at Mansfield) was presented by Killian and his staff. This group feels that it has taken some of the guess work out of appliance manufacturing and marketing by having researchers spend long hours listening to American women. Hand-made models of proposed appliances or features have been shown to groups of carefully chosen women under precise, controlled conditions, according to Killian. This is done before a dime is spent on the production of a new model or before a single ad appears in a magazine or paper. By conducting studies in "neutral" locations away from appliance plants, the researchers feel they can get unbiased, average opinions.

Space age distribution system

Through a combination of teletype networks, electronic computers, radio-controlled warehousing and electric delivery systems, Westinghouse feels that it has virtually extended the assembly lines of Westinghouse major appliances to the dealers' showrooms across the nation.

In addition to the normal dealer's stock for showroom purposes, the house-

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A technician places punched cards containing product orders into a computer. The machine "reads" the cards, checks the order against inventory, locates the product's position in the warehouse, and makes out shipping and billing information in a few seconds.

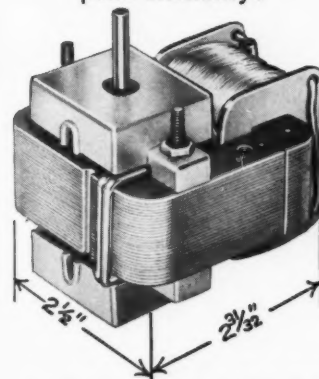


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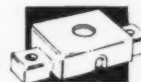


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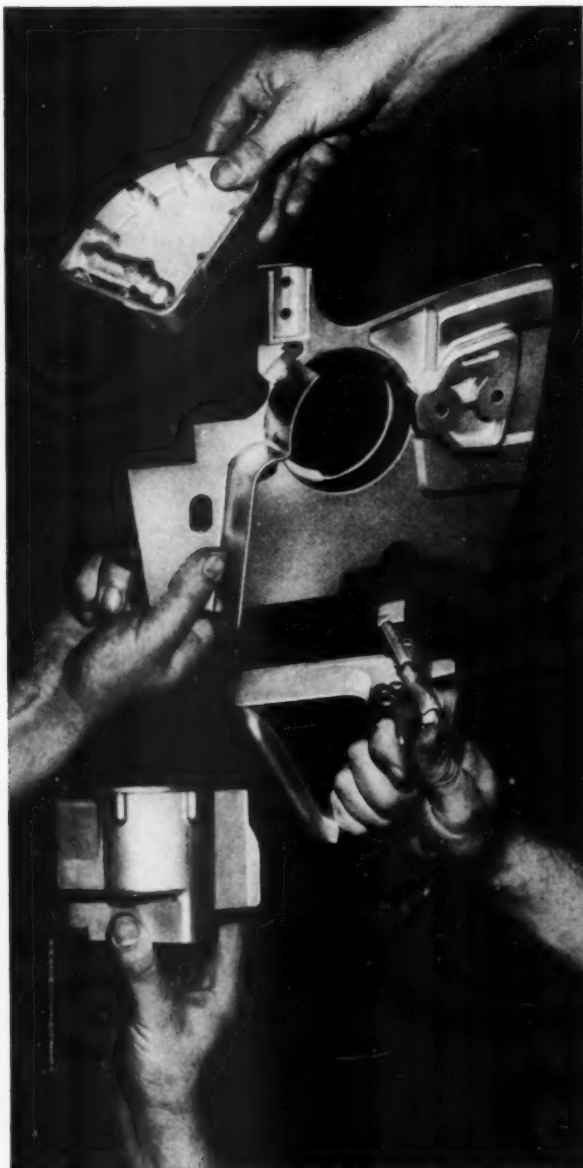
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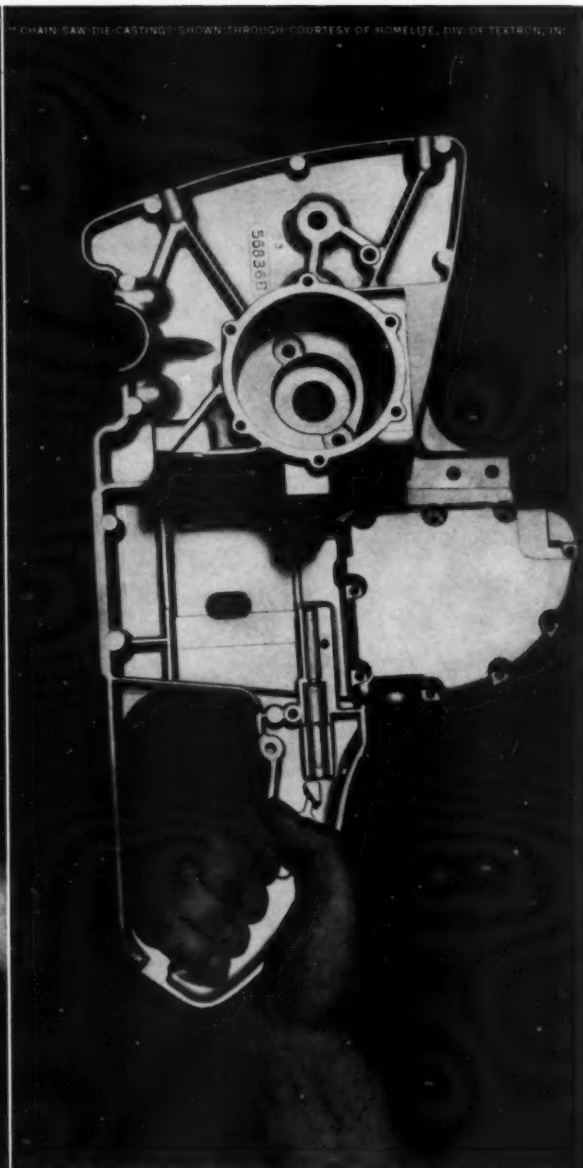
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Westinghouse speeds

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wife has a choice of more than 350 individual styles and models of 12 different Westinghouse major appliances, with the knowledge that any one of these products can conceivably be in her home in from one to three days following selection.

If the purchaser selects an appliance that the dealer doesn't have, the retailer phones the distributor; the distributor teletypes the order, along with others, to the central headquarters at Columbus. The teletype order is automatically converted to punch cards and fed into an "electric brain."

The computer keeps track of more than half a million different appliances, including their exact location in the warehouse.

Calling "Operator 25"

The nationwide network of a Western Union "Operator 25" system soon will be used by Westinghouse to supply consumer customers with the names of authorized major appliance and TV service locations, according to Creech. Starting December 1, lists of authorized Westinghouse service operations will be available through 21,000 Western Union offices. Between 4500 and 5000 authorized distributors, dealers and independent service companies will be listed, subject to call through Western Union's Operator 25.

Creech feels that, even though many appliance buyers realize that they should call on authorized Westinghouse service, many do not know how to find such service.

It will be the responsibility of Westinghouse distributors to provide Western Union with current information on authorized service sources. Requirements for recognition as an authorized service source are that service personnel be trained by Westinghouse and that an adequate parts stock be carried.

Three-point service speedup

Westinghouse officials are enthusiastic about three new programs designed to speed up and improve repair of appliances in the home. These include: (1) scientific truck loading, plus an expanded training program enabling servicemen to approach the target of 85 percent completed repairs on first call and to increase the number of calls per day (present average of one an hour). (2) Radio-dispatched trucks (now in 20 major areas) to answer most calls within 24 hours. (3) When the rarely

used part must be ordered from the factory, delivery time to the customer is reduced to as little as 48 hours.

The company has an effective full-color service training film, for use where radio-dispatched cars are in service. The present 20 locations operating this type of equipment will eventually be expanded to cover all Westinghouse distributors.

Service truckloads of repair parts are planned on a basis of case history information coming from the computers and

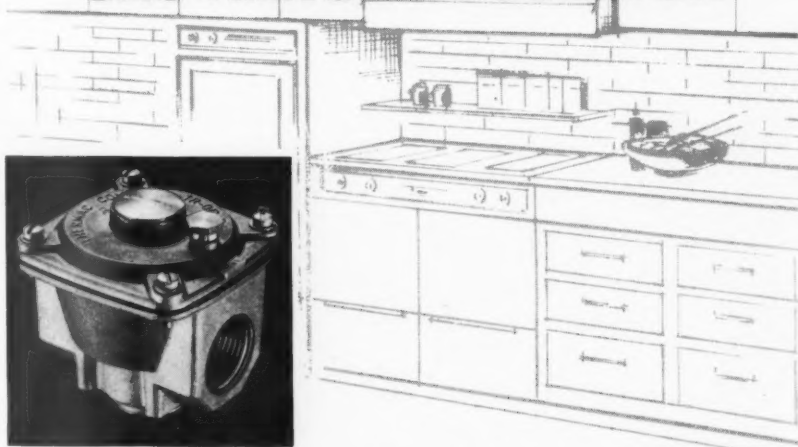
the number of each different appliance sold in the area where a specific truck normally works.

While the company operates its own major appliance service in most major cities, or through its wholesale or distributing organizations, it also has developed recommended parts loading information for more than 5,000 servicing retailers and independent service companies.

It was pointed out that at nearly 70

TO PAGE 102 →

new THERMAC model RA GAS RANGE REGULATOR



Installs easily—Regulates perfectly

This new Thermac Range Regulator, with a swinging radius of only 1 3/4", can be installed easily and in any desired position to bring the advantages of perfect burner regulation to the operation of your gas ranges! Here are the outstanding features of this new unit:

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Thermac—with over 17,000,000 Gas Regulators now in use—was first to supply a leading manufacturer a Regulator as an integral unit on all ranges, and now brings you this new and improved regulator for even wider range application. And... for all your gas appliance needs, you can choose from Thermac's complete line of Regulators, Gas Controls, Gas Shut-Off Valves, and hundreds of control combinations. Sizes range from pilot valves and regulators to controls handling up to 3,000,000 btu, all backed by 28 years experience building gas controls.

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Many manufacturers have found that Nickel-Chrome Plating provides a *practical* way to boost sales because it assures a rich, distinctive eye-appeal at a reasonable manufacturing cost.

And your customers stay happy, too, because good Nickel-Chrome Plating—plating with a durable coat of Nickel under a thin layer of chromium—resists

corrosion and wear, stains and scratches. That's why a Nickel-Chrome finish keeps its mirror-bright beauty through years of constant use.

For up-to-date information on "how much and what kind" of Nickel and chromium provides various degrees of

corrosion protection and luster, write for our booklet *The Contribution of Nickel and of Chromium to the Durability of Decorative Plating*. A copy is yours for the asking.

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Mass production method eliminates after-assembly sealing

SELECTIVE PLACEMENT AND POSITIVE ADHERENCE of a sealant in any elastomeric material is now possible in any shape, form, size or dimension on any productive part, and can be applied by a newly developed mass production method which eliminates after-assembly sealing and provides a superior seal, according to an announcement by Automotive Rubber Co., Detroit, Mich.

The selective placement of sealing material can be applied in almost any position on metal stampings, plastic parts, nuts and nut-washer assemblies, wire forms, washers, bolts, screws, rivets, studs, clips, clamps, fasteners, etc.

Problems caused by water, moisture, dirt, dust, fumes, gases and chemicals, or those caused by sound, vibration, odor, corrosion and deterioration can now be controlled and simplified, providing complete elimination of the assembly line process, and effecting savings in costs and time, plus assuring an improved permanent seal, according to the report.



Some applications are shown in which formulations such as soft, dense and closed-cell sponge rubber, soft, dense plastisol, soft closed-cell vinyl, asphaltum compounds, specially compounded waxes and other elastomeric insulating materials were used.

How Melpar employs wet blast cleaning process

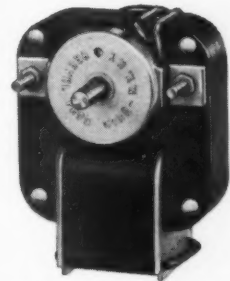
A WET BLAST PROCESS IS UTILIZED by Melpar, Inc., Falls Church, Va., makers of electronic devices and communication equipment, to clean component body or leads in printed circuit board assemblies. The company reports that the process has increased the component preparation by 50 percent without additional personnel.

One of the most vital areas of cleanliness in circuit board assemblies is the solder connection of the component lead to both the inside wall of the plated-through hole or resistance fused eyelet, and to the etched circuitry.

Melpar prepared a specification which required a uniform and complete cleaning of the component lead, conveyorized handling of the components and quick load-unload provisions. Following an investigation of commercially available equipment, a semi-automatic wet blast machine was selected.

A sheet metal extension cabinet at left of machine houses the conveyor drive unit and controls, and loading takes place on top. At the right, the extension accommodates the conveyor sprocket and serves as the unloading area.

The wet blasting process is conducted in a completely enclosed stainless steel cabinet. An abrasive is agitated into a homogenous water-grit mixture forced out of a blast gun at high velocities by compressed air. The machine is capable of handling approximately 4000 components an hour in slave carriers. It removes potting films, grease, tin/lead oxides and other foreign matter without damage to component body or leads. Equipment was manufactured by Pressure Blast Mfg. Co., Manchester, Conn.



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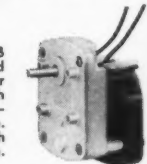
You can rely on BREVEL's experienced specialization to design, engineer, and volume-produce precision motors that give consistently superior service at low cost.

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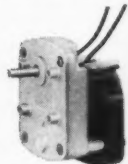
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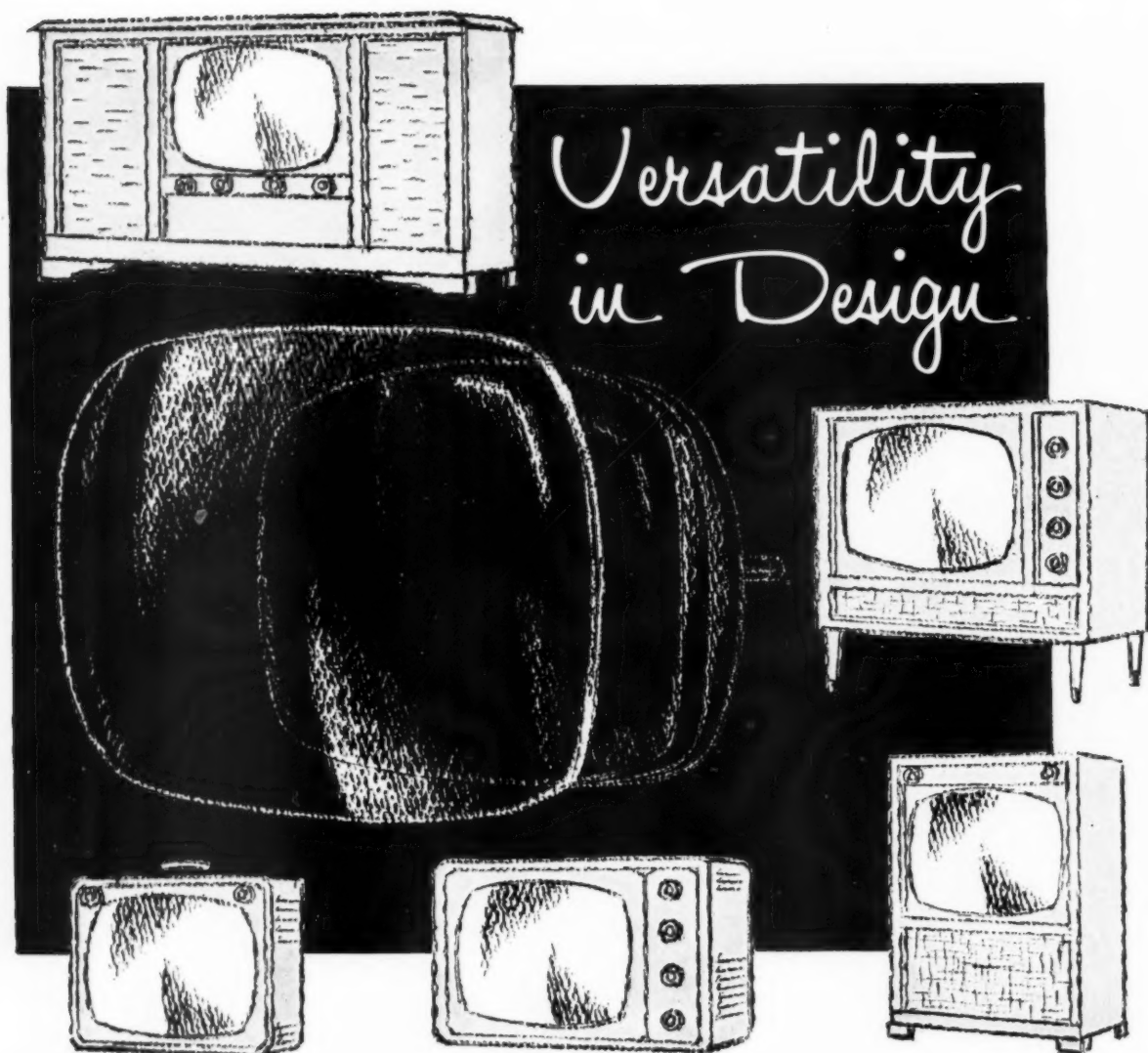
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Industry news

Caloric Changes Name

Caloric Appliance Corp. has changed its name to Caloric Corp., according to Julius Klein, president of the 71-year-old firm.

"The new name has been selected to reflect Caloric's current diversification of product lines, especially in the architectural metals field," Klein said. "It does not in any way indicate less emphasis on gas appliances, the foundation of the company, but rather shows the growth of the Caloric organization in other fields."

New Norge Gas Refrigerator Has Thermoelectric Control

A thermoelectric control used on a refrigerator for the first time was demonstrated by Norge during the recent annual convention of the American Gas Association.

In the control, a thermoelectric element is heated by the pilot flame of the refrigerator burner. This element generates an electric current which goes to an automatic pilot valve, holding open the valve as long as the flame is burning. If the flame is extinguished, the flow of current ceases and the valve closes without delay for cooling. The control was developed in cooperation with the Baso Div. of Penn Controls, Inc.



New Norge gas refrigerator with thermoelectric control is a two-door model with a freezer capacity of 93 lbs. Of freon-foamed thin wall design, the new gas refrigerator has magnetic doors, interior light across the back, and a newly designed flowing cold air system.

Sales of Hydronic Systems Up

An upward trend in the sale of hydronic heating equipment such as boilers and baseboard was reported at the annual meeting of the Institute of Boiler and Radiator Manufacturers.

Baseboards continue to be the most widely used form of heat distributors in the hydronics industry, according to the Plumbing-Heating-Cooling Information Bureau.

Hotpoint Sales at 3-Year High

Sales of Hotpoint major appliances in the final week of the quarter ended September 29 were the highest for any week in three years, the company reported.

Maytag Gives Service Award

T. M. Beazley, service manager of Maytag Rocky Mountain Co., Colorado Springs, has been named recipient of the annual President's Service Award, given by The Maytag Co. to the outstanding member of its field service organization.

The award was presented by Maytag



T. M. Beazley (right), service manager of Maytag Rocky Mountain, receives the fourth annual President's Service Award from George M. Umbreit, Maytag president.

President George M. Umbreit at the company's 10th national service conference held at Newton, Iowa recently.

Beazley has been associated with Maytag since 1934, when he joined the parts and service department of the old Sparey-Maytag Co., forerunner of the present Maytag Rocky Mountain. He has been service manager of the Colorado Springs distributorship more than 17 years.

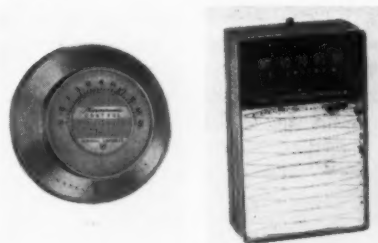
Kelvinator August Sales Up

Kelvinator's August appliance sales, up more than 26 percent over August of last year, represented the highest monthly sales total in the past four and a half years, according to an announcement by H. L. Travis, vice president-sales. August marked the fifth consecutive month

in which the appliance firm has registered a sales increase over the year-ago period. Total August sales were higher than any month since February, 1957.

Coleman Offers Free Controls

As part of a merchandising promotion, The Coleman Co., Wichita, is offering a free "Thermoramic" indoor-outdoor temperature control system with the purchase of a central heating system or year-around air conditioning equipment.



The control system, developed by General Controls Co., (above left) is a two-part system, with the key to control centered in the T-51 compensator. This unit signals information to the thermostat indoors (above right — one of two available), which calls for a comparable change in the temperature indoors. In this way, temperature changes are "anticipated" by the heating or cooling system.

Small Boiler Market Entered

The Cleaver-Brooks Co., manufacturer of packaged boilers, has announced a move into a new market. According to H. F. Holtz, the company's president, the firm is now offering a complete line of small, compact hot water boilers.

Called the Beaver, the new line of 16 models is designed for heating and air conditioning systems in small schools, motels, hotels, swimming pools, restaurants, apartment houses, shopping centers and other applications.

More Dealers Handling Portables

An increase in the number of major appliance dealers who are also retailing portable electric appliances is evidenced by the recently completed "Brands Handled" survey conducted by the National Appliance & Radio-TV Dealers Association among its members.

On the basis of returns from 35.1 percent of its dealers, NARDA reports that 67.5 percent are now handling portables as contrasted with less than 63 percent who reported selling the items last year. Brands most frequently mentioned by the retailers (in alphabetical order) in-

cluded Dominion, Dormeyer, General Electric, Hamilton Beach, Proctor, Sunbeam, Toastmaster, Universal, West Bend and Westinghouse.

Vending Profits Up in '60

The vending machine industry's net profits before income taxes rose slightly to a national average of 4.58 percent of sales in 1960, according to an industry-wide survey released by the National Automatic Merchandising Association.

This average compares with the 1959 figure of 4.33 percent and varies from 5.27 to 3.18 depending on the dollar volume classification of the vending operating companies.

Actual profit from operations in 1960, not counting auxiliary income from non-vending sources, averaged out at 3.58 percent of sales as compared with 3.24 percent in 1959.

Eureka Williams Reports "Biggest Sales Increase"

The biggest sales increase for a single month in its 51-year history is reported for August by Eureka Williams Co., a division of National Union Electric Corp.

August sales were up 51.8 percent over a like period a year ago, according to R. C. Connell, Eureka vice president. The company manufactures vacuum cleaners and floor polisher-scrubbers.

"This is not an over-exaggerated percentage over a poor sales period because August of last year was, by normal standards, a good month for Eureka," Connell said.

Borg-Warner President Retires

Roy C. Ingersoll, 76, has retired as chairman of the board of Borg-Warner.

Directors of the company have elected Robert S. Ingersoll, president since 1956, to be chairman of the board and chief executive officer. Lester G. Porter, now executive vice president, was named to succeed Robert S. Ingersoll as president.



The senior Ingersoll, a Borg-Warner official almost as long as the company has existed, was named by the board to the newly created position of honorary chairman. He will also continue as a director. His business career began in 1908 when he became general manager of the Galesburg-Coulter Disc Co., a company which merged with the newly formed Borg-Warner firm in 1929.

Norge Sept. Sales Up 59%

Norge appliance volume in September rose 59 percent above September 1960 and was the second highest for any September in the company's 34-year history. Judson S. Sayre, chairman of the Norge Div., also reported that nine-month sales climbed 34 percent ahead of the like period in 1960.

Vance of Maytag Named Iowa "Man of the Year"

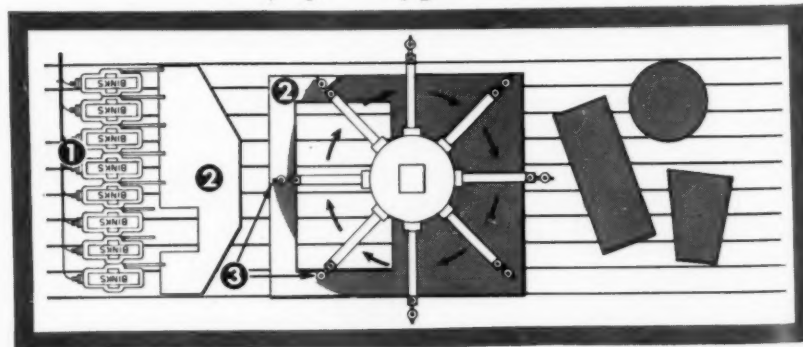
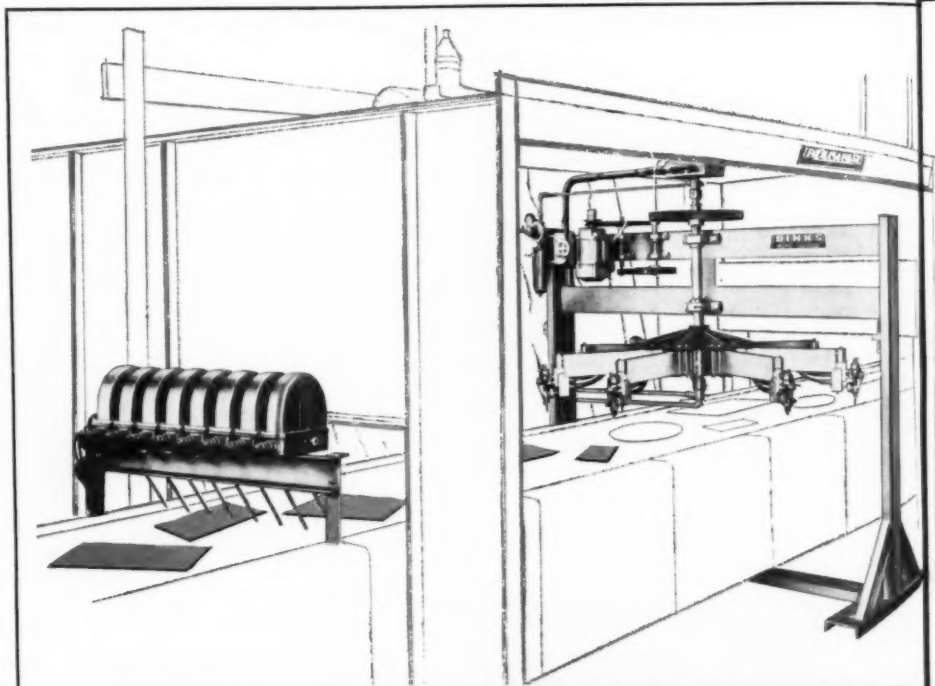
Robert E. Vance, vice president and secretary of The Maytag Co. and president of the Maytag Co. Foundation, Inc., has been named Iowa Management Man of the Year by the Iowa area council of the National Management Association.

Lead Group Exhibits

"Indestructible" Porcelain

"Indestructible" porcelain enamels were on display recently at the Industrial Building Exposition and Congress. An exhibit by Lead Industries Association featured samples of "non-spalling" porcelain enamel on aluminum. Visitors were invited to hammer and dent the samples to illustrate the resistance of the material to spalling and chipping.

Another feature of the exhibit was a set of samples and demonstrations of lead for sound and vibration control, including leaded fabrics and a "bucket of noise" made of sheet lead. The sheet was opened and closed to demonstrate the continuous noise source inside.



Here is how the system looks from above

(1) Binks MEMORY TIMERS astride your conveyor sense size, outline and location of (2) irregularly-shaped products to be sprayed and relay this information to (3) your automatically operated spray guns.

Send for Bulletins A96-IR and A96-4 for complete information or, call your Binks representative; he's as close as your telephone.

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Sherwin-Williams Opens New Chicago Research Center

A press preview tour of The Sherwin-Williams Co.'s new Research Center, located at 10909 S. Cottage Grove Ave., Chicago, was preceded by a luncheon meeting at the Bismarck Hotel recently. Arthur B. Holton, director of research for the paint firm, outlined the functions and aims of the new center.

During the three-day session, Sherwin-Williams played host to representatives of the press, and customers and suppliers. By chartered bus, the advance group was taken to the center for a tour of the 43,000-sq-ft facility, located on an 8-1/3-acre tract near the firm's Kensington plant.

Research laboratories currently in the

The new Sherwin-Williams Center at 10909 S. Cottage Grove Ave., Chicago houses the analytical, paint, resin and mineral products research laboratories of the paint and chemical concern.

new center include those devoted to analytical, paint, resin and mineral products research. The long-range development sections of the company's Chicago varnish-resin laboratory and Chicago technical service department, as well as the development and technical service division of the auxiliaries department laboratories, formerly located at the Chi-



cago factory, also have facilities at the new location.

Electrical Week Materials Sent

Planning guides and sample materials for the 1962 observance of National Electrical Week have been mailed to 5000 industry leaders and groups throughout the United States and Canada, according to an announcement by Harold A. Webster, chairman of the National Electrical Week Committee.

The "Week" will be observed for the seventh consecutive year next February 11-17.

NEMA Holds Annual Meeting

Five top electrical industry executives will review progress made during the past year and highlight plans for the future at the morning business session of the 35th annual meeting of the National Electrical Manufacturers Association at New York's Plaza Hotel, November 17.

More than 300 representatives of NEMA's 500-plus member companies will assemble for the meeting, which will be keyed by A. D. R. Fraser, president of the association and president of Rome Cable Div., Aluminum Co. of America.

Other speakers at the session will be Joseph H. Miller, NEMA managing director; U. V. Muscio, executive vice president, Fedders Corp.; R. H. Smith, secretary, The Reliance Electric & Engineering Co.; Samuel W. Murphy, Jr., of NEMA's legal counsel; and A. E. Pringle II, NEMA treasurer and president of The Pringle Electrical Mfg. Co.

1000% Sales Increase Reported

Gross sales of aluminum prime windows, sliding doors and curtainwalls have soared almost 1000 percent since 1950, according to a survey of the industry by the Metals Div., Olin Mathieson Chemical Corp. Sales of these products increased from \$70 million 11 years ago to a current annual rate of \$750 million, Olin estimates.

The figures include the value of the glass and other window, door and curtainwall components, and the cost of installation in the case of curtainwall.

MORE NEWS ON NEXT PAGE →

Cut paint costs 50% while spraying odd shapes up to 90 fpm

Tailor made automation at standard parts cost with Binks exclusive all new MEMORY TIMERS

Binks Memory Timer, a unique new electro-mechanical control mechanism, coupled with standard Binks spray equipment, gives you paint economies never before possible with automatic spraying . . . all without the expense of custom-made engineering.

The Memory Timer senses the size and shapes of objects passing beneath it on a conveyor and transmits the information to automatic spray guns. The rotating spray guns (available with 4 or 8 arms) operate only when the objects are in direct line of fire. Result: materials needed to finish a given run are drastically reduced

(savings of 50% are not uncommon). Plus, you can spray up to 90 feet per minute with an 8-arm unit.

A precision instrument, the Memory Timer is unaffected by spacing timing and speed variations. Synchronized with conveyor movement, the timer stops, starts, increases or decreases speed without adjustments or resetting. Memory Timer units can be used singly, or in multiple units driven by a common drive to accommodate almost any conveyor width. Binks Memory Timer units are adaptable to most spraying machines already in service.

Ask about our spray painting school. Open to all . . . NO TUITION . . . covers all phases

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Binks Everything for spray painting

AIEE Appliance Conference Set

Approximately 300 engineers are expected to attend the two-day domestic appliance conference of the American Institute of Electrical Engineers at the Deshler-Hilton Hotel, Columbus, Ohio, May 22 & 23, 1962.

Conference Chairman John Lieberman of Ranco, Inc., said the event will attract electrical and appliance engineers from throughout the country. In addition to engineers employed by the appliance manufacturers, representatives from supplier and component firms and research groups are also expected to attend, he said.

Briggs Buys Gibraltar Mfg.

Briggs Mfg. Co. has announced the purchase of Gibraltar Mfg. Co., Corona, Calif., to manufacture Briggs vitreous china fixtures.

According to the company, the move will provide Briggs with "a new and going plant to serve the large and rapidly growing West Coast market." In addition, the plant's production will be supplemented by continued shipments of plumbing fixtures and fittings from the four Briggs plants in the Midwest.

Owens-Corning Fiberglas Opens Technical Center



More than 100 leading research directors of major corporations, educational institutions and military services attended the formal dedication recently of Owens-Corning's Technical Research Center at Granville, Ohio. Viewing the Center's sound control laboratory are, from left, Games Slayter, vice president; Harold Boeschstein, president; Dr. Frederick L. Hovde, president of Purdue University, who gave the dedicatory address; and Maj. Gen. Richard D. Meyer, deputy chief of staff, Headquarters CONARC.

Leading research scientists from many parts of the nation assembled in Granville, Ohio, recently to participate in the dedication of Owens-Corning Fiberglas Corp.'s new multi-million dollar Technical Research Center. The facility was dedicated to Games Slayter, who is called "the father of Fiberglas."

The seven buildings making up the center house laboratories for glass, chemical, physical, mechanical and metallurgical research; reinforced plast-

ic development, product testing, acoustical research, and a "pioneering laboratory" for advanced studies on new products and processes.

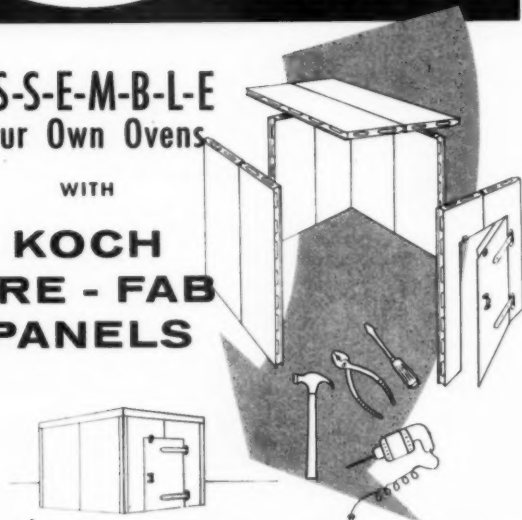
Slayter, who is vice president, research, for Owens-Corning, directs the "pioneering laboratory."

According to the company, it was largely through Slayter's efforts that practical uses of glass fibers were developed and processes created by which the material could be made commercially

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available. Since 1938, when the first glass wool products were made for air filters and building insulation, Fiberglas has expanded to a material used in hundreds of products serving more than 30,000 functions.

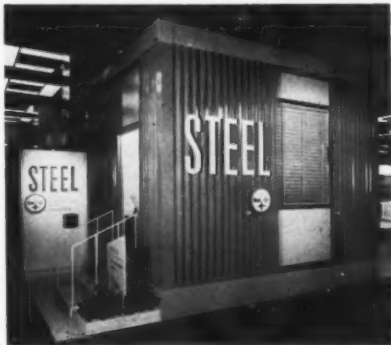
Midwest Gas Engineers Meet

"The Pre-Adjusted Gas Appliance" was the technical subject at the first 1961-62 meeting of the Midwest Chapter of the Gas Appliance Engineers Society. The meeting was held September 20 at the Dixie Governor Motel, East Hazelcrest, Ill.

Speakers who discussed the "pre-adjusted" topic were Paul Penn, Penn Controls, Inc.; Ray Wiberg, Harper-Wyman Co.; Dwight Dennis, A. O. Smith Corp.; and Earl Hillebrand, Geo. D. Roper Corp.

Bethlehem Exhibit Features Steel Industrial Buildings

Visitors saw how 26 steel products team up to produce low-cost industrial buildings in Bethlehem Steel Co.'s ex-



hibit at the recent second annual Industrial Building Exposition and Congress in the New York Coliseum.

Among the company's displays was a complete "plant office" (pictured), a room about 13 ft square, made of and furnished with steel products. An accompanying 12-transparency display showed step-by-step how the office was erected.

3rd Western Appliance Technical Conference Set

The third annual Western Appliance Technical Conference sponsored by the Los Angeles Section of the American Institute of Electrical Engineers will be held November 6 at the Biltmore Hotel, Los Angeles.

The conference will cover the newly established concept of "dividend engineering" as well as electrical and gas-fired appliances and their control equipment as used in mobile homes.

Luncheon speaker will be Dr. Fredrick Schwartz, Controls Co. of America,



At Imperial-Eastman Corporation, manufacturer of hydraulic and pneumatic systems components, A. J. Panico, metal cleaning dept. mgr., and D. McCormack, quality control mgr., compare finishing results with R. Dinsmore, Diversey D-Man.

DIVERSEY DS-9 BRIGHT DIP puts lustrous finishes on stainless steel at less cost!

Every dollar you can cut from finishing costs puts your firm in a better competitive position. Diversey DS-9 not only cuts finishing costs, it improves the appearance of your products with a single immersion. On many parts DS-9 Bright Dip eliminates the need for more costly buffing, electro-polishing or grinding. Puts a brilliant finish on hard-to-polish, intricate shape parts yet uses no electric current (another area where you can cut costs). For removing heat treating scale, weld scale, scale from forgings, or simply to provide superior finishing, you'll find Diversey DS-9 Bright Dip gives you the finish you need at a cost you'll appreciate. Also you can now bulk dip and save money.

Call your Diversey D-Man and ask for a trial order of DS-9 Bright Dip concentrate, available at nominal cost.

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As Mr. McCormack put it:

"My department is interested in quality. DS-9 Bright Dip delivers a better quality finish on stainless steel fittings and has substantially reduced reject rates because it completely removes scale."

From the production line Mr. Panico reports:

"Production scheduling used to be a major headache when stainless steel forgings were cleaned outside the shop. Now we have complete production control and we have cut high-cost, in-work inventory."

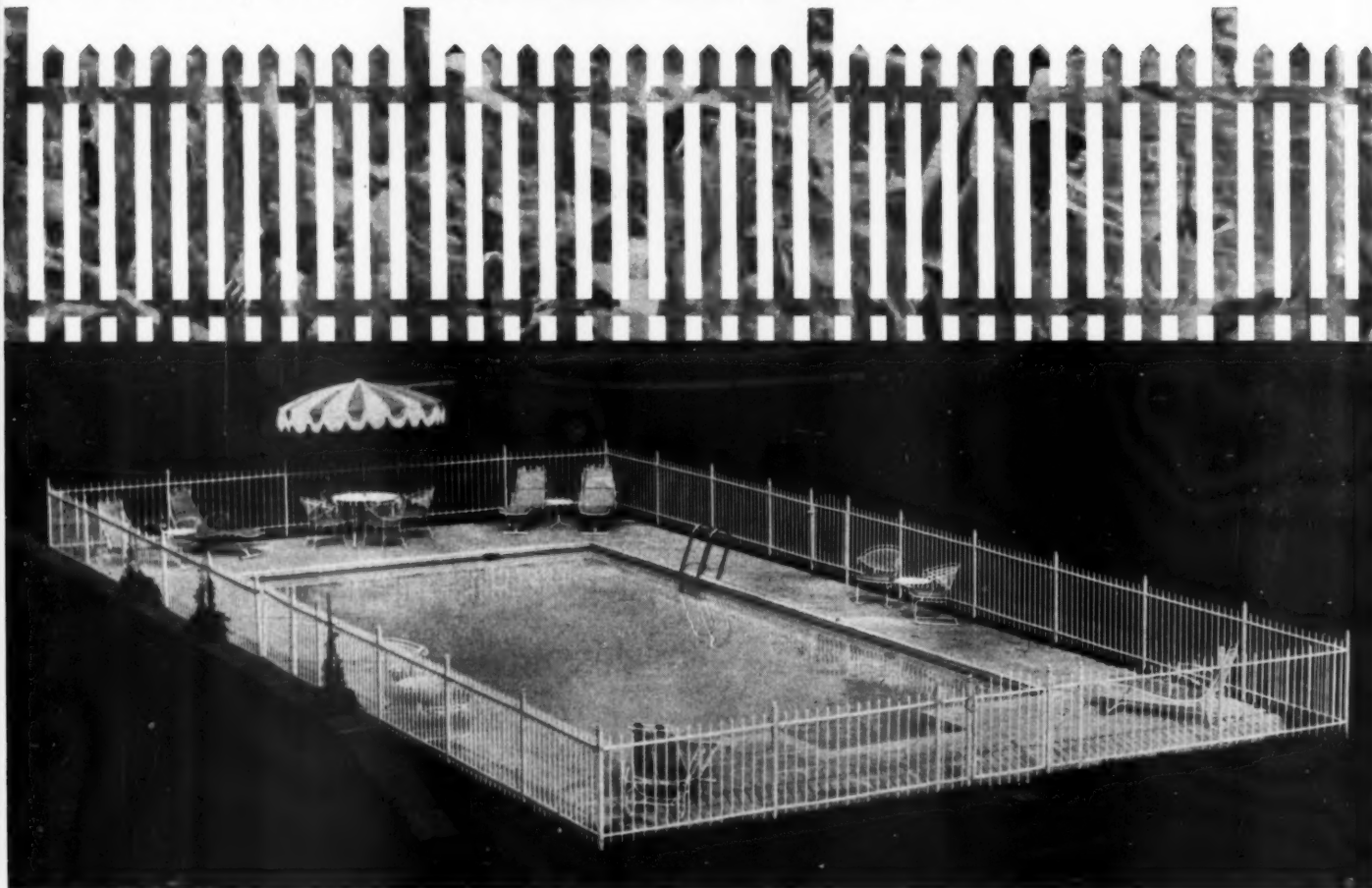
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The rich look of wrought iron, yet Westmoreland's new fencing is . . .



GUARDED BY GALVANIZED STEEL

You're looking at an attractive new idea in fences from Westmoreland Metal Manufacturing Company of Philadelphia. It's a steel fence made of square tubing which duplicates the traditional appearance of wrought iron. But it costs less and virtually eliminates maintenance problems.

It's made of galvanized steel, which means lasting protection from the punishing whims of Old Man Weather. Come rain, come snow, the zinc coating stays on guard for keeps. Galvanized steel also helps hold down the price of this fence because of its low initial cost and the ease with which it can be formed into desired shapes.

WEIRKOTE® IN PARTICULAR! The galvanized steel used in this new fence line is National Steel's Weirkote. To the inherent strength, economy and versatility of steel, Weirkote adds enduring zinc protection via the modern continuous process. As a result, Westmoreland president, Irving H. Kutcher, reports: "Weirkote comes through our fabricating operation without any harm whatsoever to its protective zinc coating. We never have to worry about chipping or peeling." Weirkote is manufactured by two National Steel Corporation divisions, Weirton Steel and Midwest Steel. Write Weirton Steel, Weirton, West Virginia, for further details.



MIDWEST STEEL
Portage, Indiana

WEIRTON STEEL
Weirton, West Virginia



Divisions of
NATIONAL STEEL CORPORATION

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who will discuss "Solid State Products for Consumer Applications." Other principle speakers are Maurice Fisher, McCann Erickson; L. D. Miles, General Electric; R. M. Schere, Waste King; D. MacDonald, Owens Corning; R. A. Bahr, California Div. of Housing; H. H. Watson, General Electric; Pieter Root, American Gas Association; Herbert Witte, Underwriters' Laboratories; and E. E. McRill, trailer park developer.

The program will last all day and includes an evening "roundtable" discussion.

ACS Enamel Division Holds First Fall Meeting

Enamels, glass and ceramic coatings for metals and ceramic-metal systems in the space age was the theme of the first fall meeting of the Enamel Div. of the American Ceramic Society held September 21-23 at the French-Lick Sheraton Hotel, French Lick, Ind.

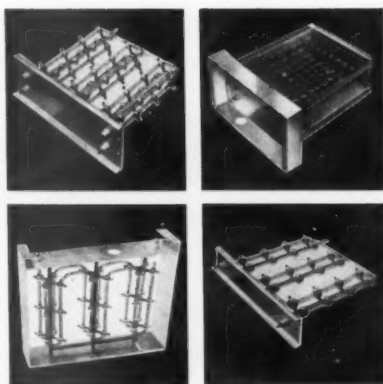
The 19 papers presented at the meeting covered a broad range of topics within the general theme. A presentation by Dwight G. Bennett, Dept. of Ceramic Engineering, University of Illinois, covered "Ceramic-Metal Science and Technology in the Space Age." He reviewed the role the Enamel Div. has played in the development of the porcelain enamel industry and pointed out the new advances which are required to keep pace with space age technology.

Two papers were presented dealing with the relatively new field of electroluminescence. John W. McNall, Westinghouse, described the phenomenon and gave a brief account of its history. He also dealt with present and future applications and emphasized the role of ceramics and enamels in the electroluminescent field. Edward W. Rollfs, Sylvania, discussed the importance of process control in production of electroluminescence.

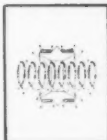
Another of the important papers, presented by Dr. Andrew I. Andrews, Dept. of Ceramic Coating, University of Illinois, dealt with "Stress and Strain in Enamel Coatings." The paper covered the development and control of stress and strain at both low and high temperatures in porcelain enamel coatings. It also summarized the findings of various investigations.

Among the other papers presented were those dealing with "Corrosion Resistant Glass Coatings for Higher Temperature Service," "Physical Properties of Flame-Sprayed Coatings," and "Metal-Ceramic Systems: Reactions, Fabrication and Testing."

MORE NEWS ON PAGE 65 →



CROSS-SECTIONAL VIEW OF NEW TEP INSULATOR AND CROSS-BAR DESIGN.



More space for air circulation assures better heat dissipation, longer wire life. Another result of TEP research.



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AT YOUR SERVICE WITH YEARS AHEAD DESIGNS

Choosing suppliers with proven performance is one of your most important tasks. TEP research-testing of new designs, materials and techniques — plus 14 point progressive inspection assures you of dependable heating units. A large majority of the electric equipment and appliances built today, that include electric heating units, are equipped with TEP products. May we have the chance to show you how we can "better" your products?

KERNS UNITED:

PERSONALIZED LUBRICANTS FOR INDUSTRY



Every manufacturing process is unique. That's why Kerns United, in formulating and recommending a lubricant considers method, machinery, metals and desired end result. Dividend: a *personalized* lubricant that performs at optimum efficiency...one that saves tools and production dollars and helps produce a better product.

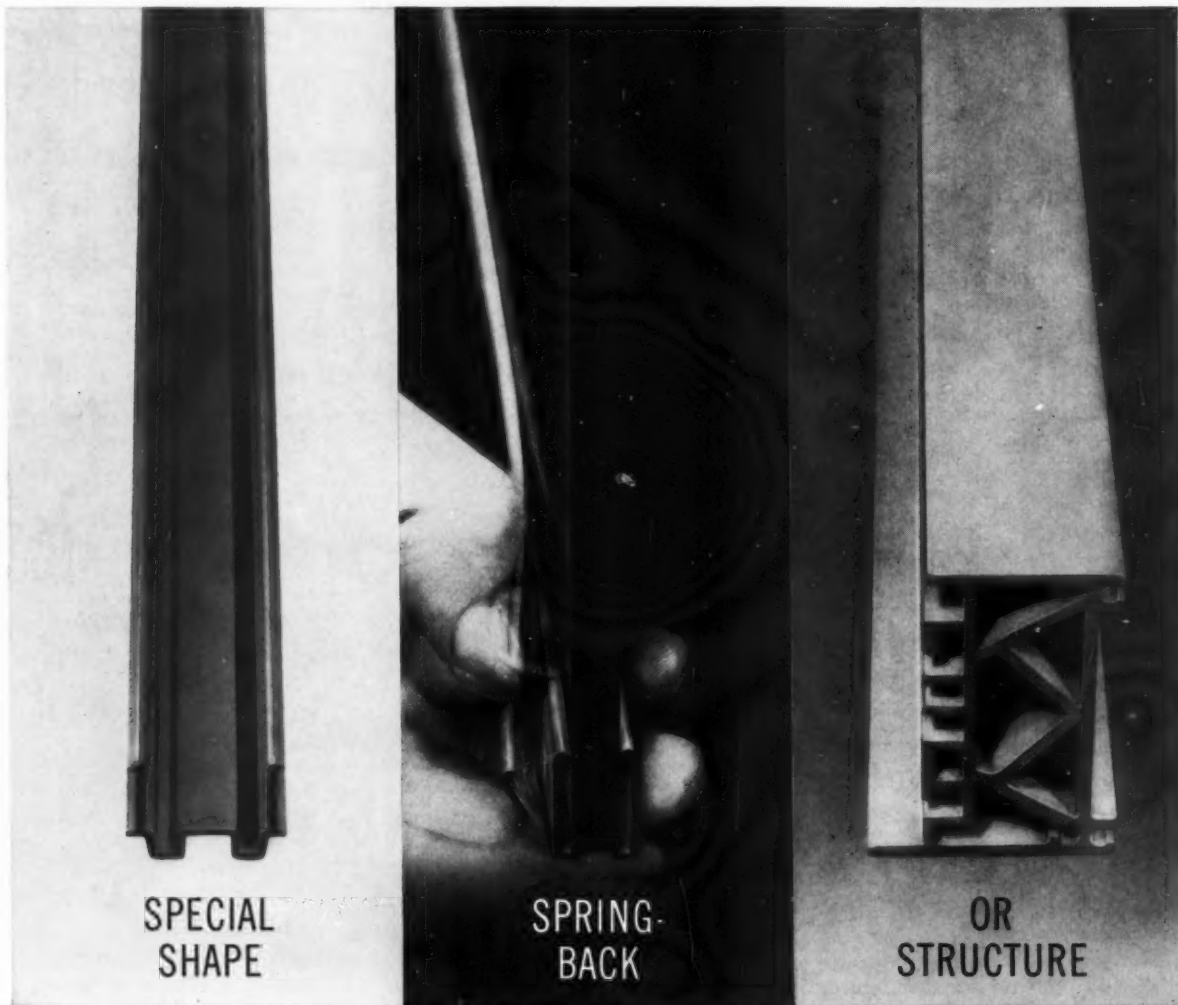
If you draw, cut, grind or forge metals...want to protect parts or clean them more efficiently...are looking for a better grease...or want greater yield from your cold reduction mill...Kerns *has or can formulate* a personalized lubricant that will perform consistently better and save you dollars. Call, wire, or write, today!

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PERSONALIZED LUBRICANTS FOR INDUSTRY

Circle No. 337 on Reader Service Card.

Each of these extrusions of rigid Geon by Crane Plastics, Inc., Columbus, Ohio, is in use for various architectural applications—chiefly windows. B. F. Goodrich Chemical Company supplies the rigid Geon vinyl.



Look how you can solve design problems with extrusions of rigid GEON vinyl

These extrusions show how the properties of rigid Geon lend themselves to solving different design problems. The special shapes show how detail can be reproduced—and it is easy to produce a long, smooth part, *straight* out of the die.

Other extrusions demonstrate how the springiness of thinner-walled extrusions gives you a spring-back characteristic for weather-stripping or rattle-proofing applications. Still others show the structural possibilities—how rigid Geon provides load-carrying strength without weight.

At the same time, each extrusion brings you all the other advantages of vinyl—unusual abrasion resistance, resistance to chemicals, self-extinguishing properties and electrical advantages. In every case there's the opportunity to mold color right in.

How can these extrusions solve your problems? We'd be glad to help you answer this question. Write Department NB-9, B.F. Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio.
In Canada: Kitchener, Ontario.

B.F. Goodrich Chemical Company

a division of The B.F. Goodrich Company



Circle No. 327 on Reader Service Card.

NEMA Announces Adoption of Air Conditioner Certification Plan

Manufacturers producing more than 85 percent of all room air conditioners sold in the United States have joined the certification program sponsored by the National Electrical Manufacturers Association.

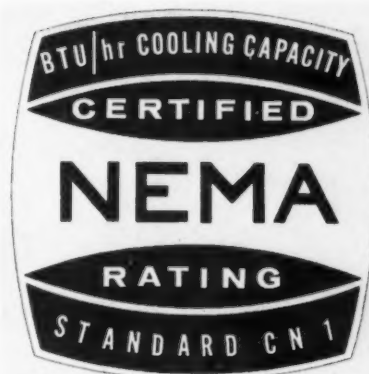
Beginning with 1962, NEMA will certify the accuracy of Btu/hr cooling capacity ratings of all units made by participating companies.

Certified models will be identified by a seal permanently affixed to the unit. A directory, kept up-to-date by frequent revisions and supplements, will be issued

so that the trade and the public will have available an accurate list of certified units and their cooling capacities. January 2, 1962, is the publication date of the first issue.

Tests will be conducted by Electrical Testing Laboratories, Inc., the program administrator, or by participating companies under ETL's supervision. If a test shows a manufacturer's rating to be in-

Seal attesting to accuracy of an air conditioner's cooling capacity will be affixed to each unit. Size of the seal is 1 1/4 in. square.



Paint Meeting Program Set

The 39th annual meeting of the Federation of Societies for Paint Technology will be held November 2-4 at the Shoreham Hotel, Washington, D. C.

One of the featured papers at the meeting will be the annual Joseph J. Mattiello Memorial Lecture, which will be delivered by Dr. Louis Arnold Jordan, founder-director of the Paint Research Station at Teddington, England.

Some of the other papers included in the comprehensive program deal with hammer finishes, blistering of organic metal coatings, coating adhesion, emulsion polymerization, and future problems of the paint industry. In addition, several panel discussions will be held with four to six participants in each panel.

Primrose Named PMI Head

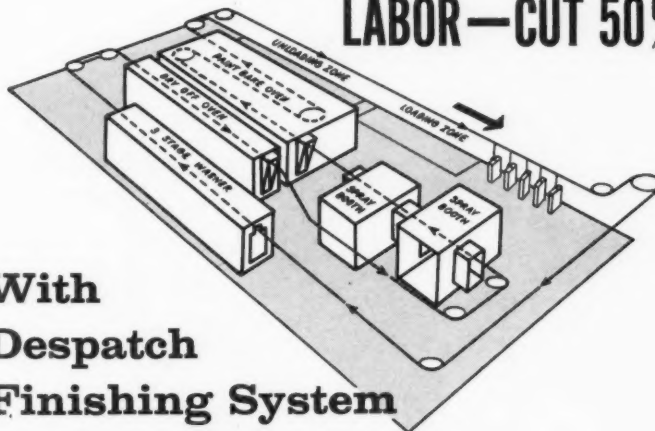
W. J. Primrose, Jr., vice president of the Dickey-Grabler Co., Cleveland was elected president of the Pressed Metal Institute at the group's annual meeting recently in Ft. Clear, Ala. Primrose succeeds Marion A. Sherwood of Grand Haven Stamped Products Co., Grand Haven, Mich.

Caloric Sets All-Time Record

Caloric Corp. has reported that sales and order backlogs in August hit all-time highs and were 36 percent over the comparable period in 1960.

"Many factors are contributing to the sales upswing," said President Julius Klein. "Among the most newsworthy have been two complete new lines of gas ranges; several significant technical advances including a radically new venting system for built-ins (see August 1961 MPM) and a gas-fired infra-red broiler unit; and progressive marketing approaches, including the Beatrice West kitchen color-styling service for builders and consumers."

PRODUCTION—UP 300%
COSTS—DOWN 67%
LABOR—CUT 50%

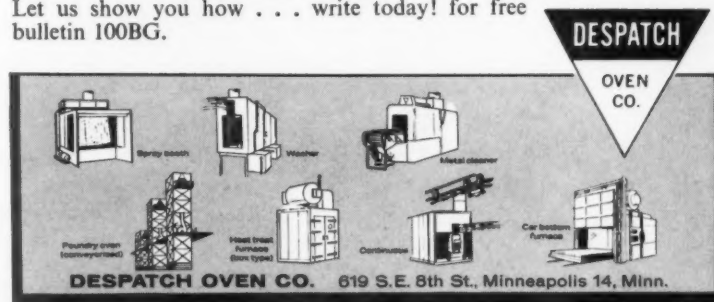


With Despatch Finishing System For Metal Products

The figures speak for themselves. Hoffman Engineering Corp., Anoka, Minn., reports that savings in production and labor costs alone paid for its complete new Despatch finishing system in only two years. And production was boosted 300% in the bargain.

The conveyorized system, designed and installed by Despatch engineers, not only produced these remarkable improvements but is capable of easy expansion in the future to match the company's growth.

Despatch's years of experience and imaginative engineering have produced solid results for this Minnesota firm and thousands of others. You can put these qualities to work for you, too. Let us show you how . . . write today! for free bulletin 100BG.



DESPATCH—INDUSTRY LEADERS FOR 58 YEARS

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good taste
in stainless steel

**McLOUTH
STAINLESS
STEEL**—the CLEAN metal
for kitchens and food handling.

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accurate, and when the result of the initial test is upheld by a second test when required or requested, the model must be re-rated. The manufacturer of a re-rated model must reduce his claimed cooling capacity rating within 30 days, notifying his distribution outlets of the action.

If a manufacturer chooses not to reduce his claim, he will be dismissed from the program. Notice of the company's dismissal will be published in the directory.

Design Office Changes Name

Dave Chapman, Inc., Industrial Design of Chicago, has announced an extension of its corporate name to Dave Chapman, Goldsmith & Yamasaki, Inc., Industrial Design.

Clearing Builds Presses

For Japanese Auto Firm

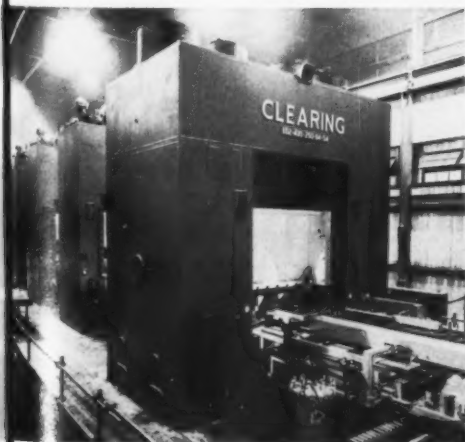
"The world's first fully integrated automated production line for turning out automobile fenders" has been built by Clearing Div. of U. S. Industries for a Japanese automotive manufacturer.

The equipment consists of six presses arranged in line to permit work to flow through the presses by means of automatic feeds. According to Clearing, the presses represent the largest single foreign order for American-built machinery on record in terms of dollar volume.

The line, which weighs a total of 700 tons, requires only two operators. Production capacity of the equipment is 1200 fenders per hour.

John R. Bartizal, Clearing president, said the line is one of four press lines Nissan Motor Co., Ltd., Tokyo has ordered at a total cost of nearly \$5 million.

Press line built for Japanese firm by Clearing consists of six presses, produces automobile fenders.



(Left) — Stainless steel pre-mix tank serves 100 drinks at the point of sale.

(Right, from top to bottom)
1 — Operator tack-welds cylinder prior to butt welding. 2 — Arc-voltage-control welding head on automatic carriage butt-welds three cylinders in line. 3 — Torch and rotary fixture weld head and bottom to cylinder shell. 4 — Infra-red bake is given to cylinders on conveyor line to set the epoxy resin fillet.



Production line fabrication of stainless steel "Coke" tanks

EVERY DAY THOUSANDS OF PEOPLE pause for a thirst-quenching "Coke" supplied from pre-mix soft-drink tanks, which are filled at the facilities of the local "Coca-Cola" bottler before delivery to vending machines and dispensing units. Stainless steel plays an important role in these pre-mix tanks.

Engineers of The Coca-Cola Co., working with manufacturers of stainless steel vessels, developed a 4 $\frac{3}{4}$ -gal. container as the most practical size and the easiest to manufacture. The tank will serve 100 drinks at the point of sale.

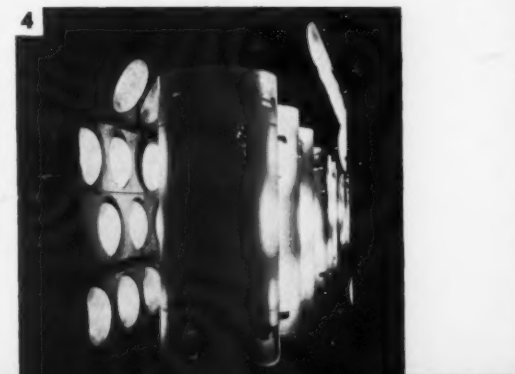
Alloy Products Corp., Waukesha, Wis., fabricates these containers by rolling stainless sheet into a cylinder and tack welding with the Heliarc HW-10 torch. A formed tab at the end of each seam assures a clean weld along the entire cylinder. Tabs are trimmed off after welding.

Linde Co.'s HWM-2 arc-voltage-control welding head performs the butt weld on the cylinder seam. A special carriage extension permits welding of three shells in line. The drawn tank head and bottom are then snapped into place, forming a cylindrical container with rounded ends.

Head and bottom pieces are tig welded from the outside using a rotary fixture. Excess portions of the original rolled sheet provide carrying handles and a guard for the cylinder top connections, while the bottom portion protects the rounded bottom and forms the base. Connector fittings are also tig welded to the head of the pre-mix tank.

A conveyORIZED infra-red oven is used to set an epoxy resin seal where the heads are welded to the cylinder bodies.

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THE HARRINGTON & KING PERFORATING CO., INC.

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MATERIAL CONFIGURATION.
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THROUGH A WIDE SELECTION
OF PATTERNS.
THESE ARE THE QUALITIES OF
H & K PERFORATED MATERIALS.
LITERATURE, DESIGN
AND TECHNICAL ASSISTANCE
IS AVAILABLE.
INQUIRIES ARE INVITED.

personals

Miss Betty Cwiek has joined Robertshaw-Fulton's Robertshaw Thermostat Div. as director of home economics. She will be located at the division's new plant at the New Stanton interchange of the Pennsylvania Turnpike.

D. J. Pollingue, Jr., has been appointed sales representative for the dri-Quik line of electric infra-red industrial drying ovens manufactured by the Dry Clime Lamp Corp., Greensburg, Ind., for Chicago and the northern half of Illinois.

Dante C. Fabiani has been elected president of Crane Co. He joined the firm in 1960 as executive vice president and was elected a director at the company's annual meeting in April of this year. Before coming to Crane, Fabiani was financial vice president and a director of McDonnell Aircraft Corp., and prior to that was a vice president of H. K. Porter Co., Inc.



FABIANI



PULASKI

John W. Pulaski has been named manager of the refrigerator and freezer cabinet section of the Westinghouse Major Appliance Div. engineering department. At the same time M. F. McCoy, the former manager, has been named manager of the systems development and product evaluation section. Pulaski joins Westinghouse after 14 years with General Electric. McCoy joined Westinghouse as a graduate student in the East Pittsburgh Works in 1948.

Joseph E. Horak has been named general manager of the Hotpoint sales and distribution department. He was formerly general manager of the firm's distribution department. He joined Hotpoint in 1959 as general manager of distribution.



MISS CWIEK



POLLINGUE

Charles W. Betz has been elected vice president-sales of the Briggs Mfg. Co. His prior experience includes a position as vice president of AllianceWare and president of the Porcelain on Steel Council.

H. W. Gillespie has been elected senior vice president of Ekco Products Co., housewares manufacturer.

Lyttleton Price, Jr., has been promoted to vice president-research and development of Rheem Mfg. Co.'s Home Products Group. He joined the company in 1940 as plant superintendent at South Gate, Calif., and held various positions in product development until his appointment in 1954 as manager of research and development for the Home Products Group.



PRICE



HOUCHINS

Charles W. Houchins has been elected secretary and general attorney for Norge Sales Corp. Norge also announced the appointment of two merchandising managers: Harry G. McDavitt was named home appliance merchandising manager and Richard C. Larko commercial equipment merchandising manager. McDavitt will direct all advertising and promotional activity on automatic washers, refrigerators and other home appliances; Larko is in charge of similar functions for coin-operated dry cleaning and other commercial appliances.

Victor M. Gardner, Jr., has been appointed a regional sales manager for Admiral Sales Corp. He will cover distributors in Baltimore, Washington, Norfolk, Charlotte and Raleigh.



SCHMIDT

Richard B. Schmidt has been named to the newly created position of manager of marketing and George M. Hase to the position of sales manager of Mueller Climatrol. Schmidt joined the firm in 1947 and has been general sales manager since 1959. Hase joined Mueller in 1948 and served most recently as manager of planning.

The J. B. Ford Div. of Wyandotte Chemicals Corp. has named a new district sales manager and reassigned two others. John J. Wilson has been appointed as the division's new district sales manager for its New York territory. James S. Hubbard, formerly New York manager, transfers to manage Cincinnati operations, and E. S. Schmeling moves from Cincinnati to fill a district sales manager vacancy in Chicago.



HASE



PRUITT



SAUR

J. C. Saur has been named to the newly created position of manager of dealer sales for the General Electric Major Appliance Sales and Distribution Dept. He will be responsible for distribution of General Electric major appliances, TV receivers and console phonographs to dealers. At the same time, the company announced the appointment of I. P. Pruitt as manager of contract sales for the department.

Jack Whaling has been named vice president-sales of the Holly-General Div. of Siegler Corp., a producer of electrical, heating and cooling equipment.

Kenneth Bucher, assistant service manager, has been named to succeed Joseph Groshans, commercial sales

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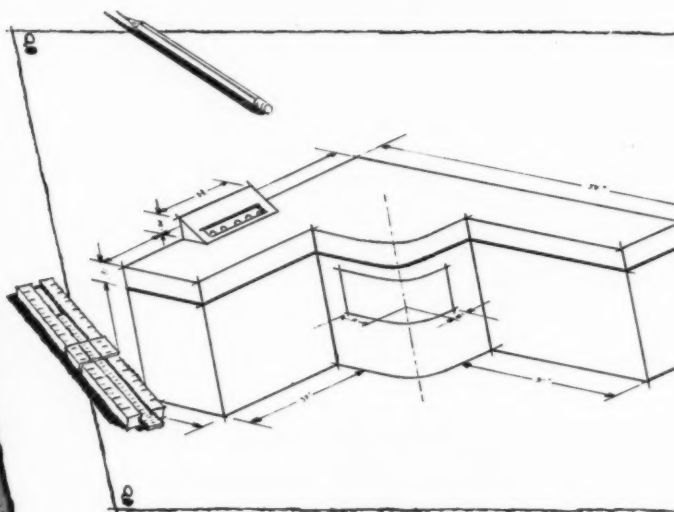
**20%-40%
MORE ALKALI RESISTANCE!**

3 New Low Temperature Frits by Pemco

**BEST FOR
DISHWASHERS
AND HOME
LAUNDRY
EQUIPMENT**

**SUPERIORITY
PROVEN IN
PRODUCTION
RUNS AND
FIELD TESTS**

These three new frits offer you outstanding qualities in terms of alkali resistance, workability, stability in slip form, and broad range firing (1425° to 1525°F). Designed for use as one-coat enamels, they also work well in conjunction with covercoats. Write for specification sheets on frits number 2618, 2619, and 2620.



FIFTY YEARS OF RESEARCH AND A FLAME

PEMCO CORPORATION
BALTIMORE 24, MARYLAND

HIGH QUALITY PORCELAIN ENAMEL FRITS AND COLORING OXIDES

Circle No. 355 on Reader Service Card.

New magnetic gasket developed by Goodrich



A NEW FLEXIBLE MAGNETIC GASKET, said to permit appliance manufacturers to streamline their products and utilize additional space, has been developed by B. F. Goodrich Industrial Products Co., Akron, Ohio.

The new gasket, according to P. W. Perdriau, president of the BFC division, has 40 percent more magnetic power than the first Koroseal vinyl flexible magnets introduced as refrigerator door closures by the company three years ago. The gaskets consist of a length of flexible magnet — and extruded Koroseal strip containing magnetized powder — encased in a "balloon" jacket of flexible vinyl.

The stepped up magnetic power permits use of a thinner magnetic strip inside the vinyl gasket and, in addition to the increased magnetic strength, the gaskets are tougher and more pliable than the earlier types.

The gaskets are said to hold the metal door gently but firmly closed and provide a perfect seal. Elimination of the need for latching mechanisms should permit manufacturers to take advantage of extra space and additional freedom of design.

Tests are being conducted on other home appliances where magnetic closures are expected to prove more functional than conventional latches. The flexible magnetic strip can be extruded in an infinite variety of shapes and sizes in any required length.

Want more information on new supplies and equipment? Copies of new literature?

Use Reader Service Card on page 93.

how big?

how small?

how
intricate?

Large handles . . . small trim parts . . . intricate knobs or hinges . . . Amerock has the die-cast facilities required to keep the work "in the house." This tight control of production and quality assures you of "Value-Plus" hardware for your products.

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An answer to a critical brazing problem

automatic brazing of air intake grille without warping made possible with special equipment



Only semi-skilled operator is needed for automatic brazing of jet engine parts on equipment designed and built by Induction Heating Corp., Brooklyn, N. Y. Machine multi-brazes one complete assembly per minute utilizing Model 1400, 25 KW generator.

JET ENGINE COMPONENTS can be extremely difficult to produce. One such component is the air intake grille, and several are used in all jet engines. Ordinary torch or oven methods of brazing the grilles are not satisfactory because they frequently warp the part.

To solve this problem, Induction Heating Corp., Brooklyn, N. Y., designed and built equipment for a French manufacturer of aeronautical parts. The equipment was installed by one of IHC's foreign representatives, Etablissements Horstmann, under the supervision of their field engineer, Georges Manset, who is also responsible for servicing the installation. The equipment will be of particular interest to American aircraft manufacturers, but the basic units can easily be adapted by many other industries as well. The work station itself has been designed for use in either the brazing or heat treating operations.

How it operates

The work to be brazed consists of a steel band bent into a semi-circle with ends brazed to a steel tube which acts as a hub or axle. Running from the tube to the band are many crossmembers comprising the grille. These crossmembers are brazed into slots cut into the band and have holes for the tube at their other end. To reinforce the strips, there are two cross ribs at right angles to the strips. These ribs are also slotted and brazed to engage the strips and to put equal space in between them.

The work coil (right hand side of work station in photo) is adjusted to cause a concentrated heat zone along the upper cross rib. Pre-placed silver solder alloy has been arranged together with a fluxing compound. Once the heat pushbutton has been energized, it is only necessary for the operator to push the carriage and watch for the solder alloy to flow around the joint areas. By adjusting his pace, the operator makes a perfect continuous braze along the entire cross rib. By inverting the assembly, the operator can accomplish a similar operation on the lower crossmember.

For heat treating, the carriage and rail mechanism is unbolted from floor mounts and moved out of the way, and other fixtures substituted in their place.

Interchangeable transformers

Interchangeable RF transformers are also included, to permit the use of a wide range of coils. Changeover from one transformer to another takes only 10-15 minutes, and the work coil change can be accomplished in two minutes.

The equipment consists of a Thermo-Monic Model 1400, 25 KW induction generator, and a Type II-A work station. A foot switch for manual heat or remote automatic cycle start operation can be plugged in. The electric power is furnished to the installation from a 440 volt, three phase, 50 cycle supply.

The equipment provides clean, fast, efficient induction heating and has also solved an otherwise difficult brazing job.

Personals

→ FROM PAGE 69

manager for **Speed Queen**, who has retired. **James Kuehn**, a field service engineer, was named to succeed **Bucher** as assistant service manager. Also, **LeRoy Grahn** was appointed assistant commercial sales manager and **Carl Zick** was named to the new position of parts manager. All the new appointments take effect January 1.

Ernest L. Gerdtz has been appointed production and development manager of **Volkert Stampings, Inc.**, Queens Village, N. Y. He will be responsible for various areas of the company's operations, including research and development, development of manufacturing procedures and estimating. He joined the company 12 years ago as a die designer in the engineering department.

C. Roy Josephs has been appointed a commercial laundry sales specialist with **The Maytag Co.** Following a training program, he will be engaged in liaison work between Maytag and its commercial laundry distributors in the merchandising of the company's coin-operated washers, ironers and dryers.

Charles A. Black has been promoted to the post of general manager of **Ampex Corp.**'s new marketing division. He had been corporate manager of financial relations.

William Teets has been elected a vice president by the board of directors of **Electrolux Corp.** He will also continue to serve as treasurer of the firm.

Miss Karlyn Vaughan has joined **Robertshaw-Fulton's Robertshaw Thermostat Div.** as an assistant on the home economics staff.

Allan Elston has been named eastern regional sales manager for **The Diversey Corp.** His most recent position was general manager of Diversey-Wilmington in Sao Paulo, Brazil.

Charles J. Martin has been appointed eastern regional sales manager of **Kelite Corp.** For the last 14 years he had been associated with Wyandotte Chemicals Corp.

Leroy Camel has been named a vice president of **Detrex Chemical Industries, Inc.** He joined the company in 1936 as technical director of the Alkali Div.

William R. Sabol has been promoted to the new position of manager of field service for **National Rejectors, Inc.**,

David D. Mason, executive vice president, recently announced.

Richard L. Waddell has been named director of public relations for **Business Equipment Manufacturers Association**, according to a recent announcement by Harry C. Anderson, president of the association. Waddell, a senior editor on *Business Week* magazine, took over his new post recently, and will be responsible for the creation of a public relations program aimed at broadening the activity of the industry as a whole.

Kenneth F. Carroll has been named works manager of the **York Div., Borg-Warner Corp.** He will be responsible for coordinating the activities of plant engineering, production control, and production supervision. He was formerly assistant factory manager for the Linde Co.

United Steel and Wire Co., Contract Div., has announced the appointment of three new sales representatives to handle contract sales. **W. D. Steel** and **F. H. Fischer** of Fischer-Steel Associates will represent the firm in southeastern New York, eastern Pennsylvania, Delaware, Maryland and New Jersey. **Joseph S. Gabry** has been assigned to cover the states of Indiana and Ohio, and **Fred L. Parker** will cover Tennessee, northern Mississippi, Alabama and Georgia.

Edgar S. Marrotte and **Leonard D. Thompson** have been named sales engineers at **General Electric's Appliance Control Dept.**, Morrison, Ill. Marrotte is responsible for sales to appliance manufacturers of the department's line of automatic oven and minute timers for electric and gas ranges and program timers for automatic clothes and dish washers. Thompson is responsible for sales of controls for domestic warm air, hot water and steam heating systems as well as controls for other special purpose applications.

George F. Schuning has been named general sales manager of the **J. O. Ross Engineering Div., Midland-Ross Corp.** One of the chief responsibilities in his new position is the management of the eight Ross sales offices across the United States.

George D. Becker and **A. L. Topp** have been elected vice presidents of **Controls Co. of America**.

Herbert W. Brown has been promoted to general manager of all operations of **H. C. Rhodes Bakery Equipment Co., Inc.** For the past 15 years he has been general manager of the company's operations in western Canada. The com-



GRIPCO GUS expands the gang...

Have you met hard workin' GRIPCO GUS? His job is finding the best nut for your application—and that naturally includes developing new ones from time to time. His latest brainstorm is a particularly good example of this continuous service. More important, it's a particularly good nut. Take a look:

The New GRIPCO® TAB WELD NUT

S1 (Spotweld Type) Single weld area for applications where space is a factor.

S2 (Spotweld Type) Double weld area for maximum strength.

P1 (Pilot Projection Type) Single weld projection.

P2 (Pilot Projection Type) Four weld projections, eliminating rocking during welding operation and to give a maximum weld.

All offering:

- Self-locating pilots for fast, accurate positioning—no locating devices needed.
- Convenient location of pilots and projections—no retapping required.
- Fast, clean welding—minimum current, short time-cycle.
- High welding quality, low carbon steel construction.
- Optional self-locking feature—the exclusive GRIPCO Toplock.
- Complete range of sizes available for immediate delivery from stock.

Get the full details on the new GRIPCO Tab Weld Nuts—including data on welding set-ups and complete price information—from your GRIPCO GUS. You'll find him listed in the Yellow Pages under "Bolts & Nuts" as the local GRIPCO Representative.

*GRIPCO is a registered trademark of Grip Nut Co.

GRIP NUT COMPANY

Subsidiary of Heli-Coil Corporation,
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3136

Circle No. 329 on Reader Service Card.

pany manufactures bakery machinery and equipment, and markets the equipment throughout the United States, Canada, Alaska and the Hawaiian Islands.

Robert E. Williams has been appointed vice president-sales of **The Youngstown Sheet and Tube Co.**, succeeding **Myron H. Watkins** who resigned after 36 years with the company. Williams was previously vice president-sales of the **National Tube Div., United States Steel Corp.**

Thomas B. Donahue, formerly executive vice president of **National Vendors, Inc.**, has been elected president of **Universal Match Corp.** He was also elected a director and a member of the executive committee. Donahue has been a director of the **National Automatic Merchandising Association** for 12 years and currently serves as the association's president.

John P. Jansson, manager of market development for the **Metals Div. of Olin Mathieson Chemical Corp.**, has been elected to the board of directors of the **Producers Council, Inc.**, an association of manufacturers of building materials and equipment.

James W. Walker has been named contract administrator for **Raytheon Co.'s Commercial Apparatus and Systems Div.** He will be responsible for contracts with commercial customers as well as government agencies. He joined the company in 1956 as a service administrator.

Herman Altman has been named to the newly created position of executive vice president and general manager of two subsidiaries of **Welbilt Corp.** — **Wedgewood-Holly Corp.** and the **Wedgewood-Holly Appliance Co.**, both of Culver City, Calif. He was previously director of purchasing for **Welbilt** at the company's plant in Maspeth, N. Y.

C. M. Manasco has been elected president of **Redisco, Inc.**, sales financing subsidiary of **American Motors Corp.** He becomes the sixth **Redisco** president in the company's 35-year history, succeeding **C. R. Brogran**, who retired after 14 years with the firm. Manasco previously served as executive vice president.

Designers Metal Div. of Southern Electric, Inc., has announced the appointment of the following men to their sales organization: **S. H. Cox**, eastern regional manager; **W. T. Fields**, sales

manager, **St. Louis District**; and **John C. Martin**, sales manager, east-central district.

Metal & Thermit Corp. has made three executive appointments. **Leonard W. Mawhinney** has been named a vice president; **R. A. Bernabo** has been elevated to corporate secretary; and **E. J. Robesch** has been appointed assistant controller and assistant secretary.

M & T also announced the appointment of **Chester G. Borlet** as plating specialist for the firm's **Plating Div.**

Harry J. Bolwell has been elected vice president of **Midland-Ross Corp.** and general manager of the company's **Surface Combustion Div.** He was previously general manager of the **Chattanooga Div. of Combustion Engineering, Inc.**

Maynard L. Diamond has been appointed assistant to the president of **Marsh Steel and Aluminum Co.** Prior to joining **Marsh**, he was president of the **E. W. Clark Co.**, **Everett, Mass.**

F. W. Monge has been named manager, **Virginia Div., Electro-Tec Corp.**

Robert M. Burford has been appointed supervisor of equipment sales of the **Metal Processing Dept., Pennsalt Chemicals Corp.** He moves to his new assignment from **Cleveland**, where he was district manager. He joined the company in 1947.

Stanley Steel Strapping Div., The Stanley Works, has announced two engineering appointments. **Ira G. Cruckshank** was appointed to the new post of

TO PAGE 76 —>

New time control for "convenience cooking"

AN OVEN CONTROL SYSTEM combining an improved version of the "Flame Master" gas oven thermostat with an automatic time control to provide "convenience cooking" has been developed by **Robertshaw Thermostat Div., Robertshaw-Fulton Controls Co.**

Under the new system, a time control automatically reduces the oven from its cooking temperature to an optimum serving temperature. Once the cooking has been completed, the oven cuts back to a lower setting, at which the meal can be held for several hours if necessary.

The basic gas oven thermostat contained in the system is a new control

which cycles the main burner gas full "on" and "off" in a range of temperatures from 550 F down to 140 F. This cycling eliminates the need for a bypass, which is normally a source of many requirements for service calls.

The automatic shutoff pilot designed for use with the oven thermostat in the new system provides "a new concept in automatic ignition." Since there is no gas cock, this device is the sole means of shutting off gas to the main burner, and the seating pressure of the closing valve has been increased many times over that of present automatic safety pilots, according to company officials.



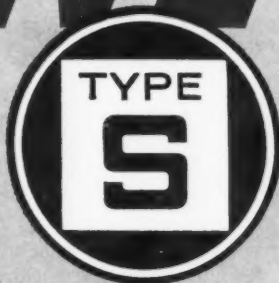
Sketch of a control panel for the new "Convenience Cooking" system now being offered by **Robertshaw-Fulton's Robertshaw Thermostat Div.**, including the optional "meat probe" dial (center). Under the standard system, the homemaker has only two settings to make — required cooking time (dial at left) and desired cooking temperature (right). The time control reduces the oven heat automatically from cooking temperature to optimum serving temperature. The meat probe, an added feature of the system, automatically controls reduction of oven temperature relative to internal meat temperature.

ONE STANDARD SCREW REPLACES MOST THREAD-CUTTING AND THREAD-FORMING SCREWS



Patent
applied for

NEW



TAPPING SCREW

with **LOW** drive torque...

HIGH strip torque

Square point provides 4 points of contact • Starts straighter • Offers chip-free driving • Low drive torque with high strip torque • Resists vibration... won't loosen • Uses same lead hole • Replaces most types of thread-cutting and thread-forming screws... simplifies inventory... assures better price break.

Available in standard head styles, finishes and sizes... for unlimited applications • Compare features, tests, advantages and prices...

You'll buy TYPE "S" tapping screws!

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CABINET HARDWARE • LOCKS • PLASTICS • FASTENERS • APPLIANCE HARDWARE...ALL FROM ONE SOURCE

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MCDANEL METAL JACKETED CERAMIC LABORATORY MILL JARS

Quart, gallon and two-gallon sizes! Easy to discharge, clean! Rubber or neoprene gaskets! Low pickup, longest life! For cradle or roller mills.



Write for Catalog today!



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REFRACTORY PORCELAIN COMPANY
BEAVER FALLS • PENNSYLVANIA

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Personals

→ FROM PAGE 74

manager of engineering, and **Donald T. Armington** was appointed to the new post of manager of manufacturing engineering.

Fritz C. Hyde, vice president and formerly assistant general sales manager, has been appointed general sales manager of **Revere Copper and Brass, Inc.** He succeeds **Raymond P. Winberg**, who has been appointed vice president of foreign operations.

William H. McDonald has been appointed assistant manager of sales for the **Sheet and Strip Div. of Republic Steel Corp.** He has been with the firm since 1951.

Max A. Coreth has joined **Robertshaw-Fulton's** corporate staff as manager of the controls firm's International Marketing Div. Before joining the company, he was export manager of **Penn Controls, Inc.**

John P. Lynn has been appointed general manager of the **Industrial Products Div., The American Welding & Manufacturing Co.,** Warren, Ohio. He had been manager of manufacturing at **American Welding** since 1956.

Robert H. Wasz has been appointed assistant vice president of **Joseph T. Ryerson & Son, Inc.** He was formerly general manager of the Ryerson plant in San Francisco.

Lawrence Ennis has been appointed purchasing agent of **Anti-Corrosive Metal Products Co.** to replace **Frank Legnard**, who was recently promoted to general manager.

"Coke" Tanks

→ FROM PAGE 67

The epoxy fillet eliminates any built-in dirt catchers on the tank and makes cylinder cleaning easier. After finishing operations, the pre-mix product tank is ready for use.

Pre-mix units are used primarily at locations where the bulk container is preferable to the individual bottle, and as a source of beverage supply in certain cup vending machines.

NOTE: Editor's acknowledgment goes to D. J. Juleen, superintendent, Alloy Products Corp., and E. A. Shevey, engineer, Linde Co., Milwaukee, Wis.



**OVER 100 MILLION SQUARE FEET OF
DIRECT WHITE FRIT ON STEEL...**

***More than enough Porcelain Enamel
to cover the Pennsylvania Turnpike from
Pittsburgh to Philadelphia!***

Yes, sales figures show that The O. Hommel Company during the last 10 years has supplied more **WHITE FRIT** for **DIRECT-ON** steel applications than would be needed to porcelain enamel the Pennsylvania Turnpike from Pittsburgh to Philadelphia . . . Over 300 Miles!!!

From the original Hommelaya process patented over 30 years ago, to the most recent developments in **WHITE ONE-COAT APPLICATION**, **HOMMEL HAS PIONEERED** in the research and production of **DIRECT WHITE FRITS**. This leading position in the industry has been main-

tained through continuous research, using the newest steels and metal preparation techniques and . . . **HOMMEL DIRECT WHITE FRITS ARE VERSATILE!** . . . can be used over groundcoat for assured uniformity where both methods are employed . . . Available for low, medium and high firing temperatures.

Our wide experience in the development, manufacturing, and servicing of not only direct white frits, but regular groundcoats and cover coats as well, is available to you. . . See your Hommel representative for more details—Or contact us direct.

DEPT. MPM-1161



THE O. HOMMEL CO.

PITTSBURGH 30, PA.

West Coast — 4747 E. 49th Street, Los Angeles, California

Circle No. 332 on Reader Service Card.

*To avoid
spray booth
troubles*

ask Oakite

OVER 50 YEARS CLEANING EXPERIENCE • OVER 250 FIELD SERVICE MEN • OVER 160 MATERIALS



Oakite curtain water treatment takes the "tack" out of overspray

Just a few inexpensive ounces of the right Oakite additive in the spray booth water curtain save hours of clean-up time. The reason: Oakite chemicals surround each droplet of paint with an "anti-stick" film that keeps spray from adhering to walls, pumps, lines and water nozzles. Paint that doesn't settle or float immediately will still wash through the system—but it won't stick, won't clog the sprays. The result: a water curtain without gaps, a smooth running system, no unplanned downtime.

There's a full line of Oakite water additives... one to match any of the countless paints, enamels and organic coatings. The *right* one will help paint sink to the sump... or float to the surface for skimming off... or overcome special hard water troubles... or combat foaming problems. What's *your* problem? Ask the

Oakite man to make free tests in your paint spray booth. They won't interfere with production. They may save you hours of spray booth downtime. Bulletin F-9443 tells more. Write Oakite Products, Inc., 26 Rector Street, New York 6, N. Y.

it PAYS to ask Oakite



Technical Service Representatives in Principal Cities of U. S. and Canada

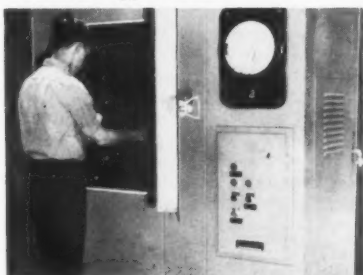
Circle No. 352 on Reader Service Card.

MPM

new supplies and equipment

For further information on
New Supplies and Equipment,
use Reader Service Card
on pages 93 & 94.

Industrial-Type Ovens

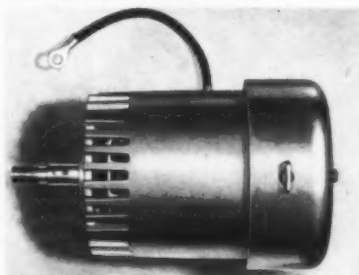


Compact, standard cabinet ovens suitable for batch production, limited production runs or experimental work requiring temperatures from 150 to 500 F are now available from The DeVilbiss Co. These heavy duty, industrial-type ovens in compact sizes are designed for use in shops, laboratories, schools and industrial plants, and are available in four sizes, three heating capacities and for electric or gas heat. They are factory assembled and test operated.

Features include four-in. Fiberglas insulation on top, sides, back, floor and door; and 20-gage steel, leakproof construction.

Circle No. 201 on Reader Service Card.

Battery-Operated Motors



The Small Motors Division, Robbins & Myers, Inc., has announced the introduction of two new motors designed for original equipment manufacturer use on electric lawn mowers, golf bag carts and similar low voltage, battery-operated equipment. Ratings offered are 1/3 and 1/4 hp at 2750 rpm. Using 12-volt current, the motors operate at efficiencies in excess of 65 percent, and end-to-end ventilation assures proper cooling effect over the entire length of the motor.

Lightweight, die cast aluminum housings result in weights of less than 11.5 lbs, while overall length of the motors (less shaft) is under 7 in.

Circle No. 202 on Reader Service Card.

Automatic Feeding Unit

A Tru-Tork Automatic Feeding Unit, manufactured by Clyde Engineering & Mfg. Co., feeds and positions seven 1/8-in. ball bearings simultaneously. To operate the machine, the ball bearings are first loaded into an oscillating hopper. From there they feed into a track and are loaded into an escapement mechanism. Upon the actuation of a microswitch, seven balls are received through a separator plate, and are forced through feed hoses by an air blast.

Circle No. 203 on Reader Service Card.

Hand Operated Sealant Gun

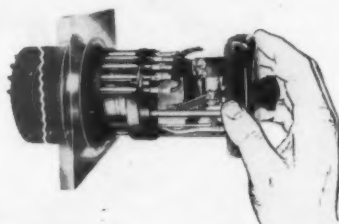


An all-metal, manually-operated sealant gun, designed for use with standard 2-1/2-oz and 6-oz polyethylene cartridges in dispensing any of the new one and two-part compounds, adhesives, epoxys, polysulphides and silicones, is now being produced by Pyles Industries, Inc., a subsidiary of The Kent-Moore Organization, Inc.

Known as the SP 1832 Hand Gun, the gun is said to be ideal for general use in the field where air pressure is not available. A threaded metal collar slides over the polyethylene cartridge and attaches to the gun handle, firmly gripping the cartridge at the base.

Circle No. 204 on Reader Service Card.

Reset Dial Timer



The ATC 305B reset dial timer, manufactured by Automatic Timing & Controls, Inc., is available with a plug-in mounting for those applications where quick change of dial range is necessary or where high rate production machinery makes downtime prohibitive. The unit, incorporating a new 14-point terminal block for easier circuit wiring, controls up to seven individual load circuits. It offers 16 different ranges from 3/10 to six seconds up to one hr to 60 hrs.

The new timer offers synchronous motor drive control of ac or dc loads in adjustable time intervals for use with industrial processes, machine tool and laboratory operation.

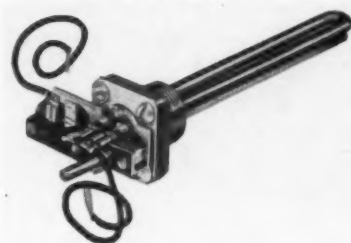
Circle No. 205 on Reader Service Card.

Thread Cutting Screws

Southern Screw Co. has expanded its line of fasteners to include Types 1, 23 and 25 thread cutting screws. The cutting edge and chip cavity in the tapered entering threads of these screws allow removal of material to form a close fitting mating thread. Thread cutting screws require minimum driving torque and withstand loosening due to vibration and temperature variances. They are available in all standard sizes, head styles and finishes.

Circle No. 206 on Reader Service Card.

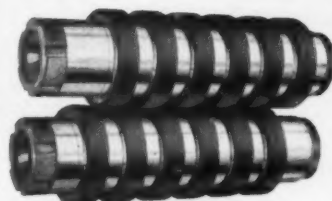
Thermostat-Controlled Heater



A thermostatically-controlled tank heater featuring individually replaceable components has been introduced by the Thermo-Craft Corp. It is suitable to a number of applications, such as vending machines, water dispensers, electric radiators, portable and trailer water heaters, etc. The unit is made to fit existing appliances or equipment having pipe openings of 1 in. or larger, and a precision switch makes possible a controlled differential of plus or minus 2 F. The heater is equipped with quick-connect terminals, individually replaceable components and fittings for every situation.

Circle No. 207 on Reader Service Card.

Carbide-Rimmed Rotary Knives



Matched carbide-rimmed rotary knives for the gang slitting of light gage materials are available from Cowles Tool Co. The knives have tungsten carbide outer rims and alloy steel bodies, and are reported to hold their cutting edges ten to 15 times longer between regrinds than other knives.

The knives are used in slitting light gages of ferrous or non-ferrous material, including high or low-carbon steel, silicon, tin plate stock, aluminum, copper, brass and other materials. They can be furnished in a wide range of sizes complete with arbors and spacers to meet any gang slitting requirement.

TO PAGE 81 →

Circle No. 208 on Reader Service Card.

if you
make
ARCHITECTURAL PORCELAIN ENAMEL PANELS
or need a
clear A. R. frit
for other
**COLOR
WORK**



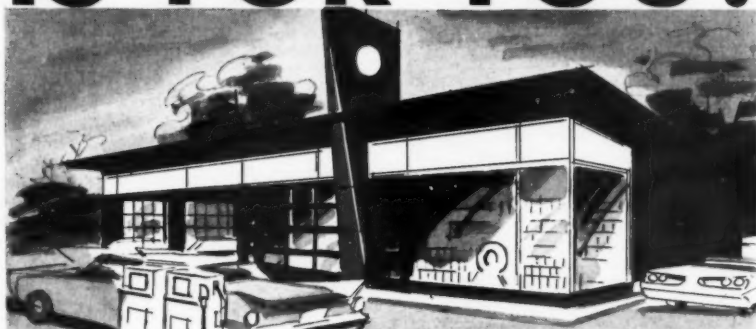
**CHICAGO
VITREOUS'
NEWEST**

1505
IS FOR YOU!

Made for a Purpose...

Proved in Production

THE ONE CLEAR FRIT THAT
PASSES THE CUPRIC SULPHATE TEST



Get all the facts about 1505 from your Chicago Vitreous representative. You'll want to order enough for a trial run so that you can learn all of its advantages under your own production conditions.

Chicago Vitreous

A Division of the Eagle-Picher Company

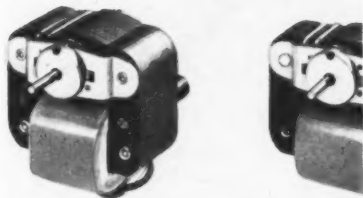
CORPORATION

1425 South 55th Court • Cicero 50, Illinois

New supplies

→ FROM PAGE 79

Unidirectional Non-Geared Motors



An exceptionally small unidirectional nongear motor, with approximate dimensions of only 2.5 in. by 2.25 in., is available from Barber-Colman Co. The YAA sizes offer ratings to .005 hp, no-load speed of 3000-3300 rpm, starting torques to .19 lb-in., alignable sleeve bearings and various mounting arrangements. Typical applications are fans for deodorizers and electronic equipment, blowers, re-roll chart drives, phonographs, gear trains, electric erasers, and others where physical size must be kept to a minimum.

Circle No. 209 on Reader Service Card.

Special-Purpose Valves



Compact design, space-saving construction, and high performance capability are among the major features claimed for a new dispensing valve specially designed for use in automatic dishwashing machines. The valve is available in two models, one for dispensing liquid detergents, the other dispensing liquid water softeners (not shown).

The second new development announced by the American-Standard Controls Div. is a "2-in-1" dispensing valve specifically developed for use in coin-operated washing machines (photo).

Circle No. 210 on Reader Service Card.

Sequence Control

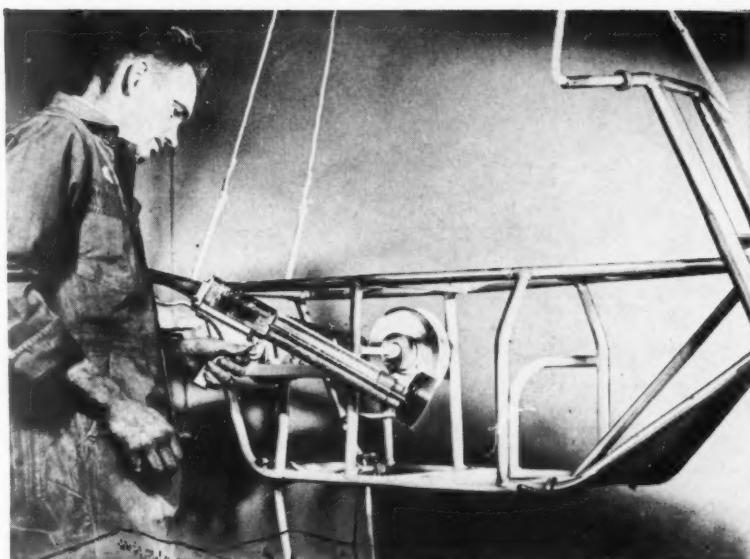
An approach to the control of electric heating, based on an orderly sequence of operation as called for by the make or break of a low-voltage wall thermostat, has been announced by Controls Co. of America. Incorporating the approach is the new Model 36 control, product of the firm's Heating and Air Conditioning Div.

In the control, a switching circuit ties together a number of 5-kilowatt load modules to form a single unit.

Circle No. 211 on Reader Service Card.

MORE NEW SUPPLIES ON PAGE 83 →

MPM NOVEMBER • 1961



RANSBURG Hand Gun Cuts Paint Costs 35%—Painting Time 25% Over Former Flo-Coat in the Production of **TOTE GOTE** Cycles

Continually searching for better and faster manufacturing methods, the Bonham Corporation, Provo, Utah, switched from flo-coating to Ransburg Electrostatic hand spray to paint their Tote Gotes. The Tote Gote is an "off-highway" cycle, especially popular with hunters and fishermen who use it to travel over rough and rugged terrain not readily accessible by highways and roads.

Now, with electrostatic spray painting, Bonham is getting an improved uniform coating . . . a 35% savings in paint cost . . . and painting time is cut 25%. And this over flo-coat!

The predominately tubular construction of the Tote Gote makes it particularly adaptable for painting with the Ransburg No. 2 Process Hand Gun. That's because the "wrap-around" feature of electrostatic painting covers all such areas from one side only.

NO REASON WHY YOU CAN'T DO IT TOO

See how the Ransburg Electrostatic Hand Gun can save time . . . paint . . . and cut costs in YOUR finishing department. Or, if your production justifies, it will pay you to investigate Ransburg's automatic electrostatic spray painting equipment. Send for our No. 2 Process brochure which cites numerous examples of modern production painting in both large and small plants.

RANSBURG

RANSBURG Electro-Coating Corp.

Box 23122, Indianapolis 23, Indiana

Affiliates in AUSTRALIA • AUSTRIA • BELGIUM • BRAZIL • DENMARK • ENGLAND • FRANCE • FINLAND
GERMANY • HOLLAND • INDIA • IRELAND • ITALY • NEW ZEALAND • NORWAY • PAKISTAN • SOUTH AFRICA
SPAIN • SWEDEN and SWITZERLAND

Circle No. 358 on Reader Service Card.



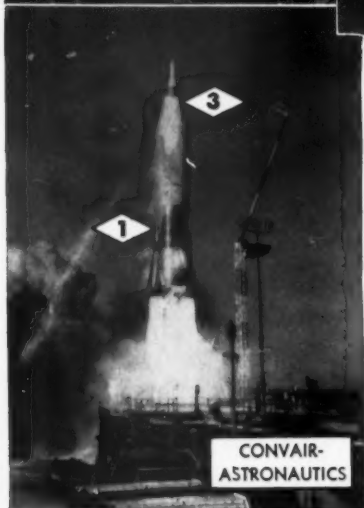
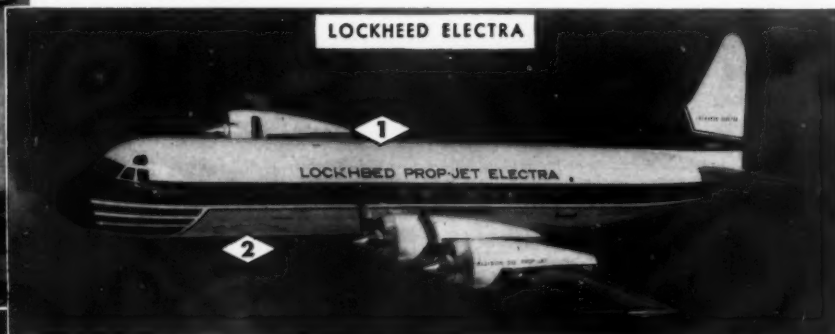
you need

**for a
superior
paint base
on light
metals**

IRIDITE®

PROCESS ENGINEERED CHROMATE CONVERSION COATINGS

- 1 Iridite protects against high altitude weather extremes and against corrosion by hydrocarbon fuels, such as gasoline and kerosene.
- 2 Iridite provides a highly protective non-porous paint base.
- 3 Iridite protects against corrosive storage conditions.



And, Iridite gives you these additional advantages:

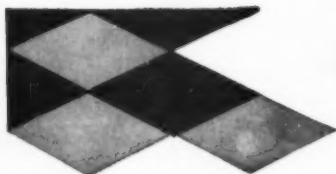
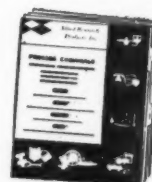
ON ALUMINUM—needs only normal pre-cleaning. Film withstands cold forming or bending. Easily heliarc welded. Unusually low electrical resistance. Clear, yellow or dye-colored finishes.

ON MAGNESIUM—short immersion, room temperature solution, no electrical equipment. Corrosion protection relatively unaffected by high drying temperatures. Applicable to all alloys. Low electrical resistance. Color ranges from light gray to dark brown.

IRIDITE—a specialized line of chromate conversion coatings for non-ferrous metals. Easily applied at room temperatures with short immersion, manually or with automatic equipment. Forms a thin film which becomes an integral part of the metal. Cannot chip, flake or peel; special equipment, exhaust systems or highly trained personnel not required.

Iridite is approved under government and industrial specifications.

For complete information on Iridite, contact your Allied Field Engineer. He's listed under "Plating Supplies" in the yellow pages. Or, write for **FREE TECHNICAL DATA FILES**.



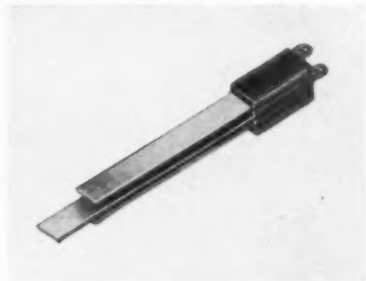
Allied Research Products, Inc.

4004-06 EAST MONUMENT STREET • BALTIMORE 5, MARYLAND

Affiliated operations in principal countries

Circle No. 303 on Reader Service Card.

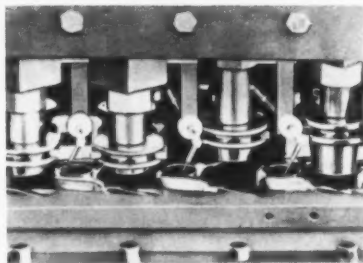
Miniature Stack Switch



A miniature stack switch called the "Tini-Stack" has been introduced by Switchcraft, Inc. It consists of a "pile-up" of various miniature springs, insulators, etc., with maximum length of contact spring 1-3/4 in., 3/16-in. mounting centers and 5/32-in.-wide switch parts. The switch, because of its miniature size, can be readily utilized in compact electronic equipment. Illustration shows a typical switch; other switch assemblies are available in innumerable different arrangements to meet particular needs.

Circle No. 212 on Reader Service Card.

Press Die Safeguard



An electronic device which signals the exact location of malfunctions in slide transfer machines and shuts the press down automatically before damage can occur has been announced by Wintriss Controls, division of Industrionics Controls, Inc. Failure of die blank work to transfer from one station to the next will not only cause the unit to halt the press immediately, but the station where the potential problem lies is indicated to the operator by signal light on a compact, easy-to-read control panel. The signal lights may be positioned on or off the press, or in a remote location. Audible alarms are available to indicate press shut-down, in addition to the visual signals.

Circle No. 213 on Reader Service Card.

Double Coil Stock Reel

A double coil stock reel, manufactured by Cooper Weymouth, Inc., is designed for high production metal stamping, and uncoils stock smoothly to stamping presses and other allied automatic production equipment. Double reel feature enables off side to be loaded while other is in operation. A touch of the foot pedal releases the pedestal lock, allowing reel head to be swung into position with new coil correctly aligned for immediate operation. Each side automatically locks when in operating position.

Circle No. 214 on Reader Service Card.

MPM NOVEMBER • 1961

For Wall or Counters
PYRAMID
 Precision Engineered
 STAINLESS STEEL
 frames for ALL
 Built-In Appliances

Pyramid Mouldings Inc.
 5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL. — WHITE PLAINS, N. Y.
 WESTERN MOULDINGS INC., 1111 EAST 8TH STREET, UPLAND, CALIFORNIA

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Something New for '62

VINYL-COVERED

in leather, fabric and wood patterns

OR CHROME PLATED

in brilliant or satin finishes

PERMA-GRIP®

Bar-Type Handles

These contemporary-styled handles will add new luxury and grace to your appliances for 1962.

A durable, heat and abrasive resistant vinyl film is permanently bonded to steel, making it resistant to cooking fats and household cleaners. The low specific heat factor of the vinyl keeps these handles "cooler to the touch" even at high oven temperatures. New conical-shaped plastic spacers serve as a thermo-break for additional insulation.

All of these handles are available in sparkling chrome finish with your choice of coined patterns. Consult us about your needs today!

out of our carton — onto your door!

12

Standard Models —
Many Standard Patterns

Immediately available at

**STANDARD
PRODUCTION
PRICES**

Consult us on your custom handles, too.

MILLS Products, Incorporated

1015 WEST MAPLE ROAD

WALLED LAKE, MICHIGAN

Circle No. 348 on Reader Service Card.

MPM

Industry meetings

PEI SHOP PRACTICE FORUM

The Porcelain Enamel Institute's 23rd Shop Practice Forum, The Ohio State University, Columbus, Ohio, November 1-3, 1961.

APPLIANCE TECH. CONFERENCE

The Third Western Technical Conference, sponsored by the Los Angeles Section of the American Institute of Electrical Engineers, Biltmore Hotel, Los Angeles, Calif., November 6, 1961.

PACKAGING

Packaging Machinery Manufacturers Institute Show of 1961, Cobo Hall, Detroit, Mich., November 7-10, 1961.

HEATING, AIR CONDITIONING

The 48th Annual Convention of the National Warm Air Heating and Air Conditioning Association, La Salle Hotel, Chicago, Ill., November 8-10, 1961.

AIR CONDITIONING

The Air Conditioning and Refrigeration Institute's Annual Meeting, The Homestead, Hot Springs, Va., November 12-15, 1961.

NEMA

The National Electrical Manufacturers Association's 35th Annual Meeting, The Plaza Hotel, New York City, N. Y., November 16, 1961.

AUTOMATIC MERCHANDISING

The National Automatic Merchandising Association's 1961 Western Conference and Exhibit, Ambassador Hotel, Los Angeles, Calif., December 1-3, 1961.

APPLIANCES & RADIO-TV

The National Appliance & Radio-TV Dealers Association's Annual Convention, Edgewater Beach Hotel, Chicago, Ill., January 7-9, 1962.

HOME FURNISHINGS

International Home Furnishings Market, The Merchandise Mart, Chicago, Ill., January 8-17, 1962.

HOUSEWARES

The National Housewares Manufacturers Association's Housewares Exhibit, McCormick Place, Chicago, Ill., January 15-19, 1962.

ENGINEERING, MAINTENANCE

National Plant Engineering & Maintenance Show, Convention Hall, Philadelphia, Pa., January 22-25, 1962.

AIR-CONDITIONING, HEATING

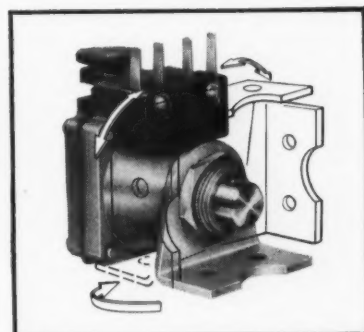
The 12th Exposition of the Air-Conditioning, Heating and Refrigeration Industry, Great Western Exhibit Center, Los Angeles, Calif., February 12-15, 1962.

MPM NOVEMBER • 1961



This Is The Timer You've Been Looking For!

The NEW HAGEN MODEL 90 Pneumatic Timer



**WEIGHS LESS THAN 1 OZ.
FITS IN 1 1/2" CUBE**

This NEW miniature timer is a simple, cost-cutting solution to solving time delay problems in the products you build. It's *versatile* — with an adjustable delay range of .2 seconds to 20 seconds. It's *reliable* — designed for long life. And it's *rugged* — with a high impact strength G. E. "Lexan" plastic body.

**Mounts anywhere in any position.
Universal Mounting Bracket included.**

CIRCUITS

Single Circuit — Double Break — 10 Amps., 250 V.A.C.
10 Amps., 30 V.D.C. (Ind.)

Two Circuit (S.P.D.T.) — 5 Amps., 250 V.A.C.
3 Amps., 30 V.D.C. (Ind.)



TERMINALS

Taper-tab quick disconnect terminals standard.
(Screw type terminals optional)

OPERATING TEMPERATURE RANGE

32° to 120° F.

Each Timer comes packaged in its own plastic shock-proof container. Write for Bulletin 1630 showing further details of the Model 90 Timer.

BLISS



HAGEN MANUFACTURING COMPANY

SARABO, WISCONSIN

A DIVISION OF THE GAMEWELL COMPANY, AN E.W. BLISS COMPANY SUBSIDIARY

Circle No. 330 on Reader Service Card.



brighter
future
for zinc

...with FINEST FINISHING PROCESSES from Cowles

Looking for better zinc plating results? . . . Cowles has a complete line of zinc brighteners that provide all degrees of lustre from high brilliance to soft satin to give a new look to your products, speed up processing and produce more uniform results.

Cowles' complete plating services go far beyond zinc brighteners. You can

depend on Cowles products and processes for every phase of cleaning, phosphating, conversion coating, coloring and final protection. Your Cowles Technical Man can demonstrate immediate improvement in your own operation with Cowles Finest Finishing Processes. Take advantage of it — call Cowles today!

Ask your Cowles
Technical Man about
these brighteners . . .
for low current density
cyanide zinc electroplating:

PROMAT B4
PROMAT B4M
PROMAT B105
PROMAT ZB2

for high current density
cyanide zinc electroplating:
PROMAT C42

for acid zinc baths:
PROMAT AZ 6550
PROMAT AZ 6556
PROMAT AZ 6570
PROMAT AZ 6575



CHEMICAL COMPANY

CLEVELAND 20, OHIO

Circle No. 314 on Reader Service Card.

MPM

new industrial literature

FOAM DISPENSING DEVICE

The Martin Sweets Co. announces an air operated traverse mechanism, adjustable in height, stroke and traversal rate for polyurethane foam producing installations making rigid and flexible slab stock or pouring over large areas. The rotary-type, pneumatic prime mover assures smooth reciprocation through the natural cushioning of an air system. Roller bearings support the carriage which cannot jam at the stroke limits, even if the limit controls are removed.

Circle No. 115 on Reader Service Card.

COIL COATING LITERATURE

A descriptive folder on coil coatings has been introduced by DeSoto Chemical Coatings, Inc. The four-page folder features the company's newest coil coating, Acropon, a thermosetting acrylic. Also described is Korolith, a complete line of baking finishes for coil coating.

Circle No. 116 on Reader Service Card.

ELECTRIC MOTOR BULLETIN

A 20-page bulletin describing the construction and operation of the 385 different types and models of Bodine synchronous motors has been announced by Bodine Electric Co. The bulletin includes speed-torque curves, dimensional drawings, wiring diagrams, listings and photographs of all the company's synchronous motors. Performance characteristics are also discussed.

Circle No. 117 on Reader Service Card.

CLOSED-CIRCUIT TV

A booklet offered by the Electronics Div. of Fairbanks, Morse & Co. describes how closed-circuit television can be used for surveillance, transportation and dispatching, cost reduction and quality control, merchandising, security, observation of hazardous locations, and other jobs. Also described is the Mini-Camera, able to observe the interior of a 3-in. pipe.

Circle No. 118 on Reader Service Card.

STAINLESS STEEL TUBING

A 12-page booklet entitled "Stainless Steel Condenser Tubing Applications" is now being distributed by Allegheny Ludlum Steel Corp. The booklet gives detailed information on the use of stainless steel tubing in condensers, including historical background, performance data, applications in various types of water, fabrication of the tubes and other information. Charts and photographs are also included.

Circle No. 119 on Reader Service Card.

GREASE-TYPE DRY LUBRICANT

Typical applications of Molykote G, a grease-type lubricant containing a high concentration of molybdenum disulfide, one of the most effective lubricants known

for extreme pressure applications, are featured in an illustrated bulletin just published by The Alpha-Molykote Corp. The ability of the material to prevent galling, seizing, fretting and metal pickup is described.

Such actual applications as lubrication of heavy machine ways and guides, prevention of galling and seizing in threaded connections, reduction of cam wear, reduction of metal pickup on lathe centers and steady rests, press fitting of bearings and gears on shafts, and prevention of fretting on splines are discussed and illustrated.

Circle No. 120 on Reader Service Card.

INFRA-RED OVENS

A 16-page catalog offered by Edwin L. Wiegand Co. covers the full line of Radcor Standard Temperature-Rated electric infra-red ovens for industrial applications. The catalog describes the Radcor temperature rating method of automatically providing the right oven answer to electric infra-red heating problems once total time and maximum temperature have been determined.

Circle No. 121 on Reader Service Card.

WELDING SYMBOLS CHART

A basic welding symbol chart is available from Lenco, Inc. Included in the 8½ x 11 chart are basic welding symbols and their location significance, supplementary symbols, and basic joints. Printed on sturdy stock, the chart is suitable for wall hanging.

Circle No. 122 on Reader Service Card.

AIR POWER PRESSES

A new consolidated bulletin, cataloging all Hannifin air power presses has been announced by the company. It gives complete dimensioning and technical information for all open gap and column Hannifin air presses in both bench and floor-mounting models. Thirty-four press sizes are offered in a broad choice of capacities from as little as ½ ton to 50-ton force at 80 psi air line pressure.

Circle No. 123 on Reader Service Card.

ELECTROSTATIC PRECIPITATORS

A 12-page bulletin available from American-Standard Industrial Div. describes a line of electrostatic precipitators. The literature discusses the air pollution problem and how it is solved with electrostatic precipitators. Principles of the operation are described and general specifications for the company's line are outlined and illustrated. Also included are illustrations covering electronic controls and the high-voltage rectifier.

Circle No. 124 on Reader Service Card.

ELECTRIC GAGING

The Hamilton Watch Co. is offering an illustrated eight-page booklet titled "Advanced Trends in Electric Gaging." The booklet explains the function of the Hamilton electric indicator and control units and describes the typical applications of electric gaging to reduce cost of parts fabrications and inspection.

Circle No. 125 on Reader Service Card.

For further information on
New Industrial Literature,
use Reader Service Card
on pages 93 and 94.

RECORDER BULLETIN

A full line of direct and servo-operated, switchboard and portable recorders are described in a bulletin recently issued by General Electric. The bulletin relates information on 19 different types of single and multi-pen, ink and inkless, strip and round chart recorders. The bulletin also lists over 40 different electrical and physical parameters that can be measured by these recorders in various utility and industrial applications.

Circle No. 126 on Reader Service Card.

GRINDING STRESSES

The Grinding Wheel Institute has announced publication of an 81-page booklet, "Grinding Stresses: Cause, Effect and Control." It consists of collected papers which have been published as articles in the trade press, and is based on research sponsored by the Institute and the Abrasive Grain Association.

Circle No. 127 on Reader Service Card.

CONSTRUCTIONAL STEELS

A booklet offered by U.S. Steel summarizes the more significant developments in constructional steels and newest design concepts for their most effective and efficient use. "New Steels . . . New Shapes . . . New Concepts . . . Toward More Efficient Steel Design and Construction" is a 28-page compilation of technical data and new ideas arranged as a convenient and compact guide for the people who design, fabricate and build with structural steels.

Circle No. 128 on Reader Service Card.

CENTRIFUGAL ENAMELER

A brochure released by The Leon J. Barrett Co. describes a recently developed air-powered centrifugal enameler. According to the brochure, the unit is an important development in the application of paint, enamel and other coatings to small parts. Because it is 100 percent air-powered, it can safely handle highly volatile coatings.

Circle No. 129 on Reader Service Card.

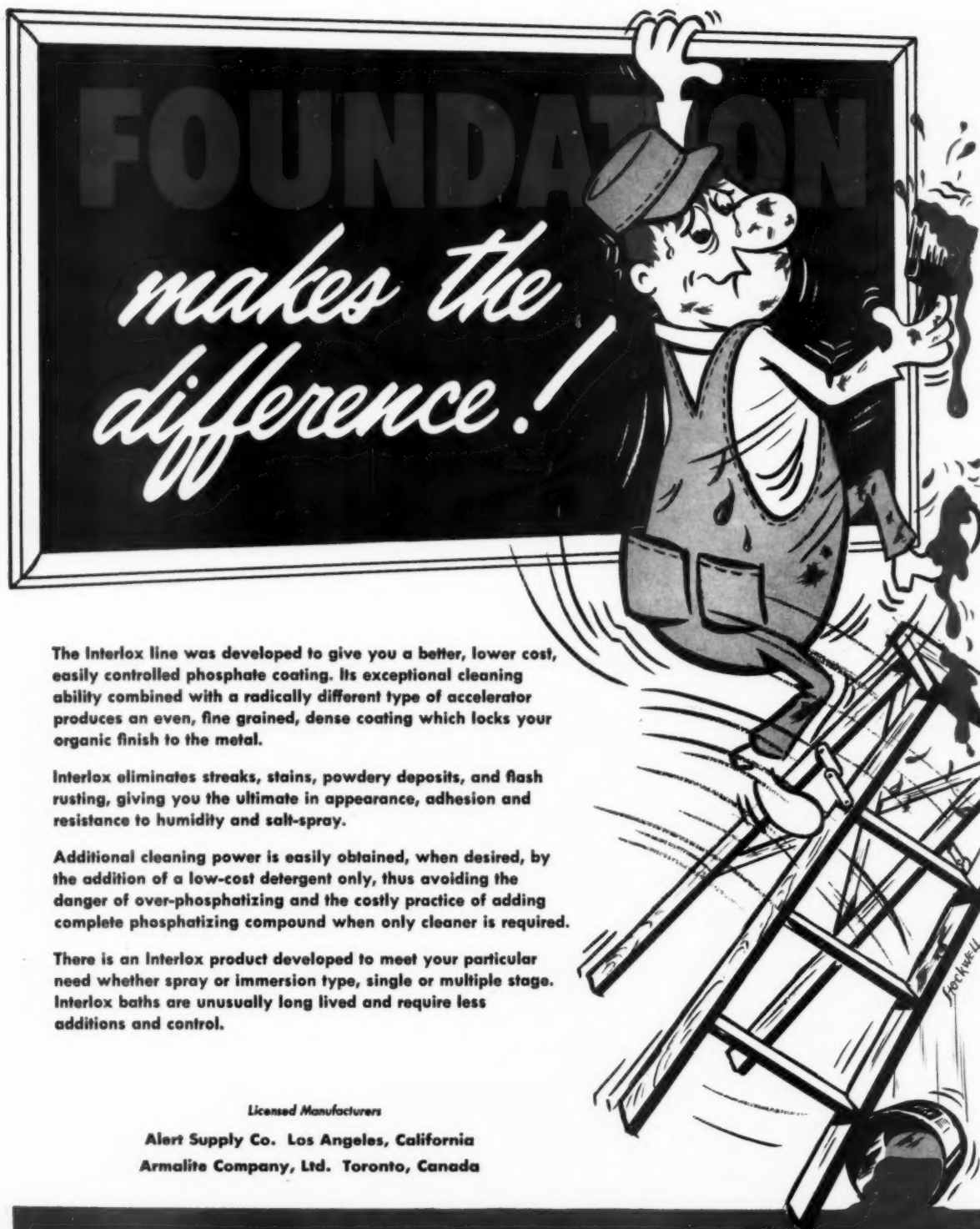
PNEUMATIC STRAPPER

Acme Steel Co. has prepared a booklet illustrating and describing its Model A4 pneumatic Steelstrapper and its application in several industries. The machine is a fully powered, air-driven hand tool which tensions, seals and cuts steel strapping. In the booklet, 14 application photographs show the tool strapping products into easily handled units and bundles.

Circle No. 130 on Reader Service Card.

ROD ENDS AND SPHERICAL BEARINGS

An expanded line of Alinabal rod ends and spherical bearings are featured in a new catalog just published by Split Ball-



The Interlox line was developed to give you a better, lower cost, easily controlled phosphate coating. Its exceptional cleaning ability combined with a radically different type of accelerator produces an even, fine grained, dense coating which locks your organic finish to the metal.

Interlox eliminates streaks, stains, powdery deposits, and flash rusting, giving you the ultimate in appearance, adhesion and resistance to humidity and salt-spray.

Additional cleaning power is easily obtained, when desired, by the addition of a low-cost detergent only, thus avoiding the danger of over-phosphatizing and the costly practice of adding complete phosphatizing compound when only cleaner is required.

There is an Interlox product developed to meet your particular need whether spray or immersion type, single or multiple stage. Interlox baths are unusually long lived and require less additions and control.

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Alert Supply Co. Los Angeles, California
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NORTHWEST CHEMICAL COMPANY

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CHEMICAL PRODUCTS DIVISION • CHEMETRON CORPORATION

Circle No. 350 on Reader Service Card.

bearing, Division of MPB, Inc. New standard items are large size rod ends with bores up to two in., and control rod assemblies in six sizes. Stud rod ends are also available. Alinibal units have patented construction features, and utilize precision ground through-hardened steel races. High static capacity and long bearing life under cyclic loading are said to be the principal benefits of the design. The race will not "pound out" in service, and continuous rotation or oscillation can be sustained in many applications.

Circle No. 131 on Reader Service Card.

LIFTING MAGNET BULLETIN

Searns Magnetic Products Div. of Indiana General Corp. has released a bulletin showing a new line of lifting magnets. The bulletin contains cutaway views of the magnets, capacity and dimensional charts, and a guide to the selection of the proper magnet.

Circle No. 132 on Reader Service Card.

DIELECTRIC SEALING COMPOUND

A technical bulletin describing a new heavy-duty electrical insulation material has been published by Johns-Manville. The new sealer, called Volseal, is described as a permanently plastic rubber based compound made with inert and inorganic fillers. It is said to have an average dielectric strength of 445 volts per mil and insulation resistance of more than 106 megohms.

Circle No. 133 on Reader Service Card.

NEMA STANDARDS PUBLICATIONS

The following new and revised publications have just been issued by the National Electrical Manufacturers Association, 155 E. 44th St., New York 17, N. Y. (Minimum order, \$1.00).

DH 1-1961 Dehumidifiers. Establishes a uniform procedure for determining the performance of self-contained electrically-operated mechanically refrigerated dehumidifiers and covers definitions, ratings, tests and safety. (25 cents per copy).

Contact NEMA direct.

HRF 1-1961 Household Electric Refrigerators. Defines a refrigerator and a combination refrigerator-freezer, provides a uniform procedure for computing net food storage volume and net shelf area and for determining performance under specified laboratory conditions. (50 cents per copy).

Contact NEMA direct.

WC 5-1961 Thermoplastic-insulated Wire and Cable. Approved by both IBCEA and NEMA. This book describes conductors, grades of insulation, protective coverings and constructional and dimensional details common to most thermoplastic-insulated wires and cables in the range of 0 to 15000 volts and includes data on such specific types as pole and bracket cable, switchboard wire and cable, and neutral-supported secondary and service drop cables. The thermoplastic insulations and jackets covered are compounds made from polyvinyl chloride, or the copolymer of vinyl chloride and vinyl acetate, or polyethylene. (\$3.50 per copy).

Contact NEMA direct.

DECREASE PRODUCTION COSTS

Would you like to decrease production costs without increasing capital outlay? Chicago Mill & Lumber Co. has announced a "Cost reduction through container utilization plant analysis program." The company states that a plant analysis can determine the total function containers should provide to save time and money throughout your plant. Four major cost areas: receiving, in-plant handling and storage, inter-plant movement, and shipping are covered by the program. Take the first step by asking for the "Container utilization evaluator." It will help to clarify and guide you through the container utilization areas of your plant.

Circle No. 138 on Reader Service Card.

ELECTROCLEANER

A bulletin released by Wyandotte Chemicals' J. B. Ford Div. covers Lectrite NF, an electrocleaner for brass and sensitive metals. Covered in the bulletin is the use of Lectrite NF at varied concentrations and temperature ranges for cleaning brass, zinc die castings, lead-base alloys, nickel-silver, and other special alloys.

Circle No. 139 on Reader Service Card.

STEEL RULE DIEMAKING

A brochure, "Steel Rule Diemaking," published by Acme Steel Rule Die Corp. and describing and outlining uses for the newly-developed method of building metal cutting dies using steel rule diemaking techniques, is available. These dies are

1. New Low Cost Synchronous Motor "JSY 1101"—Has hysteresis features at shaded pole price. Constant speed for phonographs, tape recorders, chart drives, timing devices, etc.
2. "L" Motor—Shaded pole motor for typewriters, business machines, etc.
3. "H" Motor—High starting torque, compact design for gear trains, air circulation, etc.
4. "JSG" Gearmotor—For rotisseries, vending machines, remote controls, etc.
5. "JS" Motor—Proven dependability! For fans, heaters, pumps, recorders and many others.

Rely on ALLIANCE

For the industry's most complete line of Sub-Fractional HP Motors

Alliance, world's largest producer of sub-fractional HP motors, offers the widest choice of standard and custom models, faster service, more for your money. Used in leading makes of phonographs, tape recorders, appliances, business machines, animated displays and other products—all can be customized to your own specifications.

Write for complete catalog—price quotations upon request
The Alliance Manufacturing Company, Inc., Alliance, Ohio
(Subsidiary of Consolidated Electronics Industries Corp.)

Circle No. 302 on Reader Service Card.

| Model | Voltage | Starting | | Full Load | | | Weight |
|----------|---------|-------------------|-------------------|--------------|------|-------|--------------|
| | | Torque oz./in. | Torque oz./in. | Speed RPM | Amps | Watts | |
| JSY 1101 | 117 | 1.0 | 0.4 (pull in) | 3600 | .285 | 18 | 1 lb. 14 oz. |
| L | 117 | 6.5 | 8.0 | 3250 | 1.20 | 77 | 3 lb. 7 oz. |
| H | 117 | 1.0 | 1.0 | 2500 | .310 | 17 | 1 lb. 0 oz. |
| JSG | 117 | 225 | 165 | 12-14 | .490 | 25.5 | 1 lb. 7 oz. |
| JS | 117 | 1.75 | 2.70 | 2900 | .570 | 29 | 1 lb. 2 oz. |

**ALLIANCE
MOTORS**

said to cut costs an average of 70 percent, and will cut metal up to 1/8-in. thick, including steel, copper, brass, bronze, aluminum and many of the commonly used metal alloys. They are said to be of advantage to companies producing short run stampings, as well as companies engaged in research and development projects which require pilot production runs. Included in the brochure is a description in detail of steel rule dies for the precise cutting of simple and complex shapes in paper, plastic, felt, linoleum, etc.

Circle No. 140 on Reader Service Card.

GAGING ALUMINUM COATINGS

A brochure published by Twin City Testing Corp. introduces the Type EC Permascope for non-destructive measurement of three types of coatings: a non-conductive coating on a non-ferrous base metal such as aluminum or copper; a non-ferrous coating on a non-ferrous base; and a non-ferrous coating on a non-conductor; and conductivity of a non-ferrous metal.

Circle No. 141 on Reader Service Card.

LINING MANUAL

A brochure with sample lined steel chips is available from Bennett Industries. The brochure describes many uses for clear and pigmented linings, in epoxy and phenolic types, and gives a description of advantages and limitations of the various types of drum linings.

Circle No. 142 on Reader Service Card.

BOX-TYPE ELECTRIC FURNACE

A bulletin describing the advantages and features of the Sunbeam HG Box-Type Furnace for hardening, annealing, normalizing and pre-heating heat treating processes is available from Sunbeam Equipment Corp.

Circle No. 143 on Reader Service Card.

THERMOSETTING ACRYLIC FINISH

Bee Chemical Co. has released new test data on its Acrylador thermosetting acrylic finish for metals and thermosetting plastics. The company reports the acrylic enamel has passed a leading automotive manufacturer's water immersion tests and has exceptional stain resistance, humidity resistance, detergent resistance, light and heat stability, solvent and abrasion resistance. The company is recommending the finish for applications such as appliances and automobiles.

Circle No. 144 on Reader Service Card.

SILICONE RUBBER MOLDING

A revised guide on the use of room temperature vulcanizing liquid silicone rubber for model reproduction and plastic tooling is available from the Silicone Products Dept., General Electric. The eight-page publication is complete with step-by-step details on the use of the silicone rubber as a model material. A new feature is a section dealing with special techniques, including the use of pressure casting for the reproduction of finely detailed parts.

Circle No. 145 on Reader Service Card.

PORTABLE GRINDER GUARDS

Morrison Products, Inc., has announced the availability of a six-page product folder listing and illustrating wheel guards for portable grinders, sanders, and polishers. Thirty-four different types and sizes of wheel guards are listed, described as "industry's most complete line." Several photographs show the wheel guards in use.

Circle No. 146 on Reader Service Card.

MULTIPLE TRANSFER PRESS LINE

Four representative models of the Baird multiple transfer press line are described in a folder offered by the manufacturer. Data on rated capacity, production speed capability and a listing of typical applications is offered on each machine.

Circle No. 147 on Reader Service Card.

CHROMATE CONVERSION COATING

A new chromate conversion coating in dry powder form for zinc and cadmium that is said to provide the high corrosion protection of olive drab at less than half the cost is fully described in Technical Data Sheet No. 130, issued by MacDermid, Inc. Called Macro Bronze No. 4, the product enables the operator to control the bath merely by eye, the company says. By varying immersion time, the desired amount of corrosion protection can be obtained. Color of the coating, which ranges from light brown through coppertone to dark brown, indicates the degree of corrosion protection.

Circle No. 148 on Reader Service Card.

RUGGED HEAVY DUTY LEGS for Vending Machines, Appliances and Other Heavy Equipment



These legs are only a few of the many Heavy Duty Legs designed and manufactured by Wilkenson for Vending Machines, Appliances, Store and Restaurant Fixtures, Kitchen Cabinets, Metal Desks, etc.

Unlike similar legs on the market, these legs are so rugged that they withstand far greater stress and impact than they will ever receive in normal use. Quality-built throughout, they are available in a large variety of sizes and finishes.

WRITE TODAY for further information about our Heavy Duty Legs.



WILKENSON MFG. CO.

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SOLVE IT WITH PATENTED STAMPED STEEL PORCELAIN ENAMELED BURNERS

Offer Proven Performance . . . Economy

Millions Used by Manufacturers in the United States and Foreign Countries

- No drilling or tapping necessary
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- Smooth, non-resistant interior
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- Ideal for commercial, industrial, and domestic heating appliances, water heaters and laundry dryers

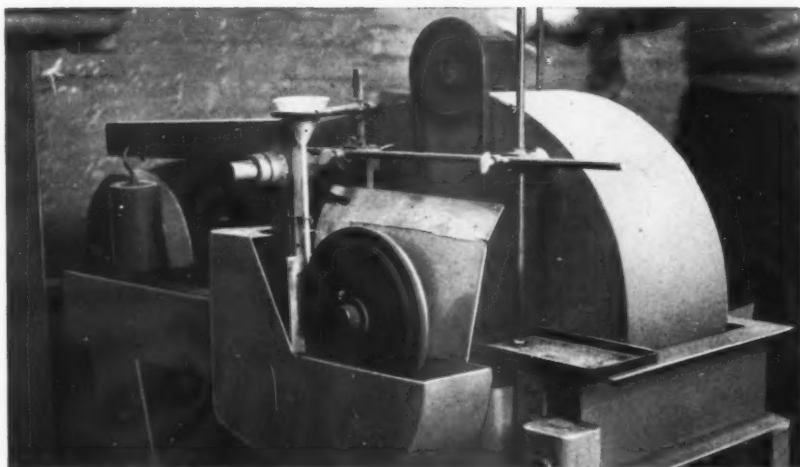
For Information Write or Phone

SAMUEL STAMPING & ENAMELING CO.

Burner Division

Chattanooga, Tennessee

Circle No. 361 on Reader Service Card.



Testing unit consists of a driven rubber wheel against which the specimen being tested is held. Note the counter at top of unit. Weight mechanism puts pressure on the sample.

Wear abrasion test for porcelain enamel

A MODIFIED VERSION of an abrasion resistance tester of metals for agricultural discs is proving successful as an abrasion tester for porcelain enamel.

The equipment, initially developed by the Armour Research Foundation, has been altered by the Ingersoll Products Div. of Borg-Warner Corp. Test results have compared favorably with two other standard methods.

The testing unit before modification consists of a driven rubber wheel against which the specimen being tested is held. An abrasive medium is fed between the test specimen and the rubber wheel. The rubber wheel is 9 inches in diameter and 9/16 inch wide. The wheel turns at 250 rpm, and load on specimen is 25 pounds.

The first change in the equipment for the porcelain enamel testing was to reverse the rotation of the wheel. The load on the specimen was reduced from 25 to five pounds to prevent cutting completely through the coating.

The abrasive material, Flint Shot Natural Ottawa Silica sand, was fed in from the top, between the wheel and the test specimen, at the rate of 130 to 140 cubic centimeters per minute.

The weight losses at 1000 revolutions of the wheel are used as indications of relative abrasion resistance for metals, but on porcelain enamel tests the coatings were completely abraded away after 1000 revolutions. Losses were recorded at 100, 200 and 300 revolutions.

The weight loss data was plotted and

relative position of the curves indicated the abrasion resistance. Finally, the difference between the weight loss at 100 revolutions and the weight loss at 300 revolutions was taken as an abrasion index.

After a considerable number of tests had been made it was decided to compare the results of the test with the results of the Porcelain Enamel Institute's abrasion test. Comparative tests on four different enamels were run, and the correlation between the two test methods was found to be "very good." The coatings were rated in the same relative order and with roughly the same proportional differences.

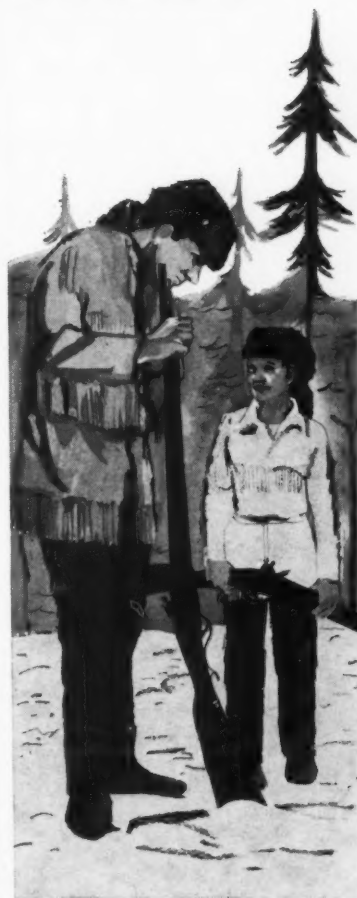
Tests were also conducted on a series of 45 Taber abrasion specimens representing 15 different enamels. While two or three of the enamels were out of order as rated by the Taber test, in general the correlation was good.

One of the outstanding points revealed in the comparison, however, was the difference in time required to run the tests. The time required for the Taber tests was reported as approximately 150 hours, whereas 10 hours were required to complete the abrasion test on an equal number of specimens with the Ingersoll Products equipment.

This works out to an average of three hours and 20 minutes per specimen on the Taber test compared to 14 minutes per specimen with the Ingersoll equipment.

How many types of frit are enough to meet today's needs? The list is almost endless . . . and APEC can furnish every one of them. Ground coats, cover coats, one-coat enamel, wet process, dry process, AR and Non-AR . . . all of these in virtually any color or shade, for firing at various temperatures. New products come out of the APEC laboratory as fast as enamellers need them, as fast as technological developments permit. And now, APEC is getting ready for even faster production of innovations . . . we're building an all-new, far larger, ultra-modern laboratory to house our growing technical staff. Proof, again, that APEC is the growing source for porcelain enamellers.

TIMES HAVE CHANGED



...and APEC is changing
with the times



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MAC-BOND 71-D A 3-STAGE METAL PREPARATION SYSTEM

THE SIMPLIFIED PHOSPHATE OPERATION

1 Combination cleaner and phosphatizer.

2 Water rinses.

This test sheet was not protected with Mac-Bond.

3 Provides a chemically sealed coating for maximum corrosion resistance.

This test sheet was protected with Mac-Bond 71-D.

THAT GIVES THE PERFECT PAINT BOND

MAC-BOND 71-D IS
BEING USED
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AND MANY OTHER
PRODUCTS

Mac-Bond 71-D is a highly efficient and economical cleaner and phosphatizer suitable for pressure washers and still-tank cleaning and giving a maximum paint bond and rust resistant coating.

Metal products manufacturers, both large and small, are finding the Macco 3-Stage System is solving their paint-adhesion problems with utmost dependability and economy. (Also adaptable for one to six stage operations.)

WRITE OR PHONE FOR A MACCO SERVICE ENGINEER TO SHOW YOU
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THE METALWORKING INDUSTRY LOOKS TO MACCO FOR LEADERSHIP

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CUTTING LUBRICANTS



DRAWING COMPOUNDS
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PRESCOTT 9-0800

Circle No. 342 on Reader Service Card.

Reader Service

BEARING CATALOG

A new catalog showing the complete line of new "Lube-Align" bearings has been announced by Bronze Bearing, Inc. The catalog provides complete engineering data on all styles of the bearings. The bearing, according to the company, is a new development featuring a one-piece, self-aligning, integrally cast spherical self-lubricating bronze bearing nested in an aluminum housing. It is available in a choice of different types of mountings in a wide range of stock sizes. Special sizes are also available.

Circle No. 101 on Reader Service Card.

SPEED NUT BULLETIN

A 32-page bulletin issued by Tinnerman Products, Inc., describes each fastening principle in the major product line and gives actual applications and engineering data. The firm's "J" type fastener, for example, is pictured in silhouette on a mechanical drawing of a typical application. It is also shown in close-up on an actual product with a large illustration of the fastener itself. Also included is a section devoted to multiple-function fasteners.

Circle No. 102 on Reader Service Card.

"MINI-SLIDE" SOCKETS

Detailed literature on "Mini-Slide" individual sockets and multi-socket strips for Sylvania's new long-life miniature slide base indicator lamps is available from Industrial Devices, Inc. Molded socket strips — with up to 12 sockets per strip — are available as well as individual sockets. The strips can be cut off to satisfy requirements for any quantity of sockets up to 12. The literature provides descriptions for each style and type of socket.

Circle No. 103 on Reader Service Card.

PUSHBUTTON SWITCH ASSEMBLIES

A data sheet issued by Micro Switch covers the new millisecond-length electronic pulse switch series developed by the company. The series, designated 1PB3000, produces one square-wave pulse with each operation. It presents a complete, noise-free, pre-engineered switch circuit package for many applications in the electronics field. Also included in the data sheet are details of circuit variation, electrical and mechanical characteristics, application, installation and complete pricing information.

Circle No. 104 on Reader Service Card.

AIR FILTER FACTS

The first in a series of Air Filter Fact Sheets is available from Farr Co. Intended as supplement sheets to the Farr Air Filter Handbook, the sheets give many application and design details needed for air filter installations in wide variety of installations.

Circle No. 105 on Reader Service Card.

SEAMLESS MYLAR BELTS

Seamless Mylar belts dimensioned to customer specifications are described in a recently published bulletin. Said to be especially suited for flutter and slip-free precision power transmission in the fractional and sub-fractional horsepower range,

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| 115 | 131 | 147 | 163 | 179 | 195 | 211 | 227 | 243 | 259 | 315 | 331 | 347 | 363 | 379 | 395 | 411 | 427 | 443 | 459 | | | | |
| 116 | 132 | 148 | 164 | 180 | 196 | 212 | 228 | 244 | 260 | 316 | 332 | 348 | 364 | 380 | 396 | 412 | 428 | 444 | 460 | | | | |

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What article in this issue interested you most? _____

the belts are made in lengths to 48 in. and widths to 1 in., and in thicknesses from .5 to 10 mils. Produced by Kineloc Corp., the belts can be pretensioned on fixed centers. According to the company, they often simplify designs by eliminating idler tightening and center adjusting provisions.

Circle No. 106 on Reader Service Card.

PROXIMITY LIMIT SWITCH

A General Electric bulletin describes the company's new CR115D proximity limit switch for detection of ferrous and non-ferrous materials without physical contact. Drawings show typical applications for the switch, including sorting, counting, inspection and limiting machine travel.

Circle No. 107 on Reader Service Card.

MINIATURE FHP MOTORS

The complete line of Carter-Ecliptic miniature fhp motors is presented in a new catalog. Eight general types of motors are shown, each available for 12, 24, 28, 32, or 48-volt operation, with several also for 6 and 115 volts. Two gear motors and three permanent magnet models are included in the line. Photographs of each motor are shown, with dimensional diagrams and performance charts.

Circle No. 108 on Reader Service Card.

RETENTION-COOLING DEVICES

A catalog describing more than 10,000 electronic cooling and/or retention devices is available from The Birtcher Corp., Industrial Div. Contents include description

and technical data on tube clamps for retaining tubes and electronic components, tube top-holding retainers for various sizes of vacuum tubes, clamps for miniature plug-in tubes and components, Jan shield inserts for tubes, transistor retaining clips, and transistor/component heat radiators.

Circle No. 109 on Reader Service Card.

SNAP-ACTION SWITCHES

A 20-page catalog lists and describes a full line of basic snap-action switches manufactured by Cherry Electrical Products Corp. The catalog includes illustrations, technical data and ordering information.

Circle No. 110 on Reader Service Card.

CASTER INFORMATION

A guide to industrial casters is contained in a new illustrated four-page folder published by Faultless Caster Corp. From the company's line of more than 10,000 different types and sizes of casters, 17 series of truck casters have been selected for inclusion in the folder. The selected casters range in load capacity from 125 to 15,000 lbs.

Circle No. 111 on Reader Service Card.

INFRA-RED BURNERS

Pyronics, Inc. is offering a four-page data sheet on high-efficiency gas-fired infra-red burner units that assemble into continuous banks to form large radiant panels for industrial heating. Burners join end-to-end directly into continuous heating lines to 200 ft long. A single pilot lights any panel, regardless of size, and only one flame-sensing device is needed.

Circle No. 112 on Reader Service Card.

ARC WELDING EQUIPMENT

A new catalog on arc welding machine accessories covers electrode holders, ground clamps, cable connectors, lugs and splicers. Available from Tweco Products, Inc., it includes the new ball-point cable connection now on all the company's products.

Circle No. 113 on Reader Service Card.

FINISHING EQUIPMENT

A catalog sheet listing the company's stock of plating, polishing and spray painting equipment and supplies is available from J. Holland & Sons, Inc.

Circle No. 114 on Reader Service Card.

FASTENER STANDARDS

A revised and enlarged edition of "Engineering Standards and Application Data" for Parker-Kalon's extensive line of tapping screws and other fasteners is now available in a 76-page book. Complete dimensions and engineering drawings on all head styles and standard tapping screw thread forms are included, together with application and general reference data for 16 types of screws.

Separate sections are devoted to government and military specification information, value analysis inspection techniques for tapping screws, general plating data, and methods of measuring Phillips recess by penetration gaging and protrusion gaging for countersunk flat head styles.

The book is available at \$3.00 per copy from Dept. MPM, Technical Publications, Parker-Kalon, Clifton, N. J.

THIS CARD NOT GOOD AFTER JANUARY 1, 1962 11/61

| | |
|-----------------------|-------|
| Name | Title |
| Firm | |
| Street | City |
| Zone | State |
| Products Manufactured | |

| EDITORIAL ITEMS | | | | | | | | | | | | ADVERTISEMENTS | | | | | | | | | | | |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| 101 | 117 | 133 | 149 | 165 | 181 | 197 | 213 | 229 | 245 | 261 | 277 | 301 | 317 | 333 | 349 | 365 | 381 | 397 | 413 | 429 | 445 | 461 | |
| 102 | 118 | 134 | 150 | 166 | 182 | 198 | 214 | 230 | 246 | 262 | 278 | 302 | 318 | 334 | 350 | 366 | 382 | 398 | 414 | 430 | 446 | 462 | |
| 103 | 119 | 135 | 151 | 167 | 183 | 199 | 215 | 231 | 247 | 263 | 279 | 303 | 319 | 335 | 351 | 367 | 383 | 399 | 415 | 431 | 447 | 463 | |
| 104 | 120 | 136 | 152 | 168 | 184 | 200 | 216 | 232 | 248 | 264 | 280 | 304 | 320 | 336 | 352 | 368 | 384 | 400 | 416 | 432 | 448 | 464 | |
| 105 | 121 | 137 | 153 | 169 | 185 | 201 | 217 | 233 | 249 | 265 | 281 | 305 | 321 | 337 | 353 | 369 | 385 | 401 | 417 | 433 | 449 | 465 | |
| 106 | 122 | 138 | 154 | 170 | 186 | 202 | 218 | 234 | 250 | 266 | 282 | 306 | 322 | 338 | 354 | 370 | 386 | 402 | 418 | 434 | 450 | 466 | |
| 107 | 123 | 139 | 155 | 171 | 187 | 203 | 219 | 235 | 251 | 267 | 283 | 307 | 323 | 339 | 355 | 371 | 387 | 403 | 419 | 435 | 451 | 467 | |
| 108 | 124 | 140 | 156 | 172 | 188 | 204 | 220 | 236 | 252 | 268 | 284 | 308 | 324 | 340 | 356 | 372 | 388 | 404 | 420 | 436 | 452 | 468 | |
| 109 | 125 | 141 | 157 | 173 | 189 | 205 | 221 | 237 | 253 | 269 | 285 | 309 | 325 | 341 | 357 | 373 | 389 | 405 | 421 | 437 | 453 | 469 | |
| 110 | 126 | 142 | 158 | 174 | 190 | 206 | 222 | 238 | 254 | 270 | 286 | 310 | 326 | 342 | 358 | 374 | 390 | 406 | 422 | 438 | 454 | 470 | |
| 111 | 127 | 143 | 159 | 175 | 191 | 207 | 223 | 239 | 255 | 271 | 287 | 311 | 327 | 343 | 359 | 375 | 391 | 407 | 423 | 439 | 455 | 471 | |
| 112 | 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | 256 | 272 | 288 | 312 | 328 | 344 | 360 | 376 | 392 | 408 | 424 | 440 | 456 | 472 | |
| 113 | 129 | 145 | 161 | 177 | 193 | 209 | 225 | 241 | 257 | 273 | 289 | 313 | 329 | 345 | 361 | 377 | 393 | 409 | 425 | 441 | 457 | 473 | |
| 114 | 130 | 146 | 162 | 178 | 194 | 210 | 226 | 242 | 258 | 274 | 290 | 314 | 330 | 346 | 362 | 378 | 394 | 410 | 426 | 442 | 458 | 474 | |
| 115 | 131 | 147 | 163 | 179 | 195 | 211 | 227 | 243 | 259 | 275 | 291 | 315 | 331 | 347 | 363 | 379 | 395 | 411 | 427 | 443 | 459 | 475 | |
| 116 | 132 | 148 | 164 | 180 | 196 | 212 | 228 | 244 | 260 | 276 | 292 | 316 | 332 | 348 | 364 | 380 | 396 | 412 | 428 | 444 | 460 | 476 | |

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METAL PRODUCTS MANUFACTURING

215 Wayne Street

St. Joseph, Michigan

Roper elevates one-coat

→ FROM PAGE 45

tors are cautioned to "lighten-up" on re-spray, since it has been found that excessive spray on the reworked side panels causes severe warpage and loss of strength.

The company also notes that occasional difficulty with laminations is encountered when the coiled "zero-carbon" stock is subjected to the extended pickling cycle.

Some inconsistency in rates of pickle have also been observed. As an example, it has been noted in a few instances that when two pieces from different coils or different steel heats are run through the pickling machine side-by-side, one piece may have as much as double the metal removal of the other and twice the nickel deposition. To date, however, this has not caused any difficulty with either bond or appearance.

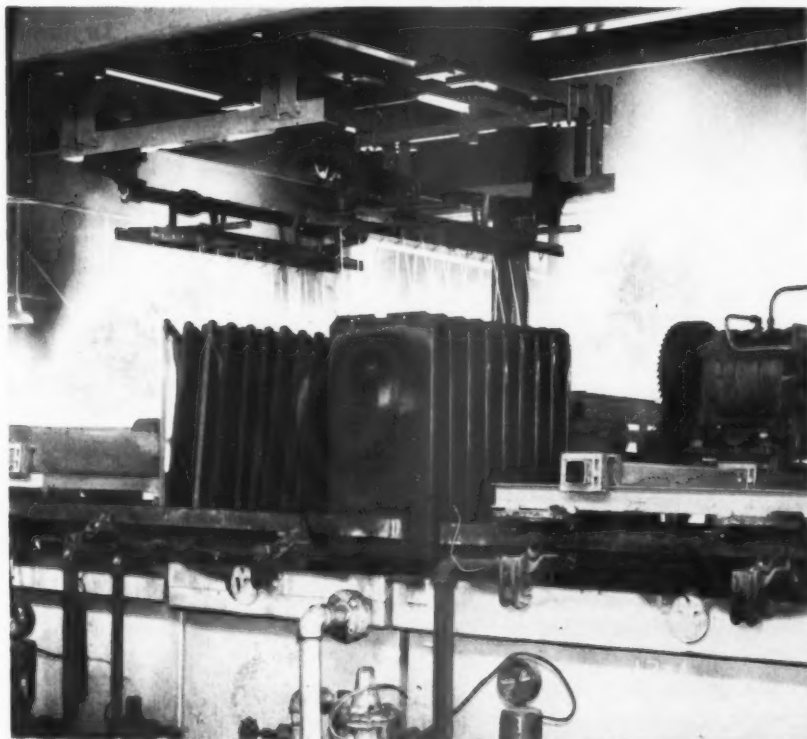
Although many engineers in the industry say that poor bond will result from a combination of too much nickel deposition and too little metal removal, Roper has not, for the most part, been affected by this circumstance. A consistency is usually maintained — if iron removal increases, nickel deposition increases proportionately.

The "problems," however, are not considered harmful to Roper's one-coat, direct-on program. The company is happy with the results to date. From the first of February through August, 600,000 sq ft of range side panels have been successfully finished by the process. One-coat, direct-on porcelain enameling has established itself at Roper.

MPM editors extend credit to Robert Forth, ceramic engineer, for supplying technical details used in this article.

Section of Roper pickling machine used for both one-coat, direct-on and conventional two-coat porcelain enameling.

PHOTO COURTESY GEO. D. ROPER CORP.



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In an effort to improve service and speed delivery of mail, the Post Office Department asks that you always include your postal zone number in your address. We wish to cooperate in every way we can — but we need your help. By giving us your zone number, you'll assure yourself of speedy delivery of your magazines.

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METAL PRODUCTS MANUFACTURING

PEI members discuss

→ FROM PAGE 29

10 percent, refrigerator liners another 10 percent, and the entire appliance field 60 percent of total usage.

Matching fund program successful

Roger Hinchman, U. S. Borax & Chemical Corp., replacing John McCord of Ferro Corp. as chairman of the Market Development Committee, reported on the progress and plans in relation to promotion activity.

Considered an important part of the program are a series of eight industrial design guides produced and distributed by the Institute. There is also a product bank of porcelain enameled ware, available for shows, TV, etc. Seventy-five retail stores are participating in a promotion through the use of special sales kits.

Plans for 1962 include strip film to touch the appliance and sanitary ware fields, and possibly a short color movie.

Public relations, formerly handled by an outside agency, will be handled from the PEI office through a recently formed public relations department.

J. K. Keating, Challenge Stamping & Porcelain Co., reported excellent progress in connection with a "matching fund" program, by which funds established for specific uses, such as architectural, general enameling, etc., are matched from a fund established by suppliers.

Expenditure of \$150,000

A. S. Ault, president, Chicago Vitreous Corp., reported an expenditure of something in excess of \$150,000 by the frit suppliers (frit on steel division) for PEI corporate operations, general and matching fund promotions, and individual company activity. W. E. Pierce, serving the frit and steel group of the PEI, will continue field engineering activity with leading users and prospective users of porcelain enamel. This activity has been given broad credit for the success to date in connection with the use of porcelain enamel for automobile mufflers, tail pipes, and farm tractor mufflers, and exhaust pipe extensions. Products currently in the limelight in connection with this activity include farm stock watering devices.

Nathan Klein, Caloric Corp., reported on the QV program in the architectural porcelain field. He pointed out that anyone in the industry can participate by meeting the requirements and supporting the program. "The Quality Verification Council is one of the most constructive programs of the porcelain enamel industry," said Klein. "It may be compared with the Blue Star and Gold Star programs of the gas appliance industry." (Eleven porcelain enamel firms now participate.) MPM

Announcing! A SPECIAL SECTION

devoted to

AIR-CONDITIONING, HEATING AND REFRIGERATION



MPM will focus a spotlight on this important industry by publishing a special section devoted to air conditioning, heating and refrigeration in the February 1962 issue. The February issue will reach the desks of key men throughout the air conditioning, heating and refrigeration industry the 1st of February, just prior to the 12th National Exposition of the Air-Conditioning, Heating and Refrigeration Industry to be held in Los Angeles, February 12-15, 1962.

This "pre-show" special section provides an excellent opportunity for your company to present its sales message to key men in every plant in the United States engaged in producing air conditioning, heating and refrigeration equipment.

The editorial scope of the section will include a preview of the Exposition and the accompanying Technical Sessions, design engineering features, statements from industry leaders, and descriptions of new products that will be shown at the Exposition.

Take steps now to be sure that:

1. Complete information and glossy photos of your new product items are sent to the MPM editorial department. Closing date for editorial material is December 22.
2. Your advertising agency is notified well in advance so that proper space reservations can be made and advertising material prepared. Closing date for complete advertising plates is January 10.



DANA CHASE PUBLICATIONS, INC.



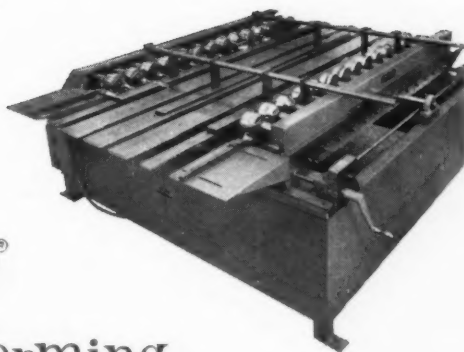
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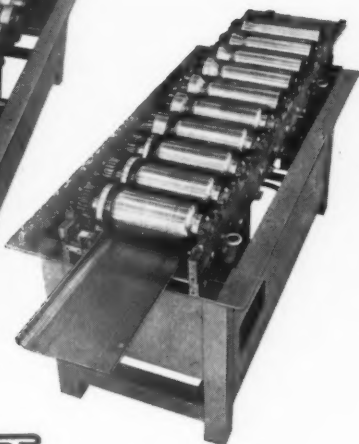
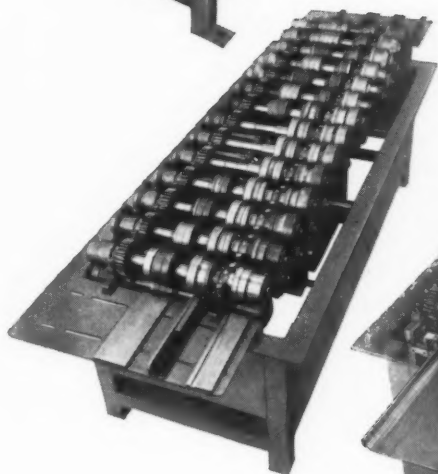
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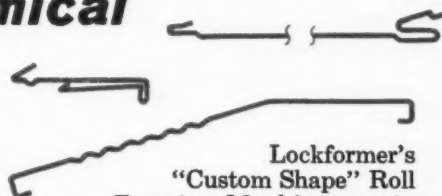
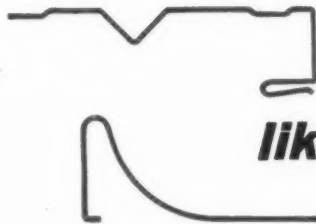
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DIVISION OF **St. Regis**
PAPER COMPANY

Circle No. 363 on Reader Service Card.

METAL PRODUCTS STATISTICS

| | | 1961 (Units) | 1960 (Units) | % Change |
|-------------------------------------|-----------|-----------------|-----------------|-------------|
| Gas Furnaces | Aug. | 94,500 | 96,900 | - 2.5 |
| | Jan.-Aug. | 570,300 | 566,500 | + 0.7 |
| Gas Boilers | Aug. | 18,072 | 16,441 | + 9.9 |
| | Jan.-Aug. | 91,918 | 86,062 | + 6.8 |
| Gas Conversion Burners | Aug. | 14,600 | 16,000 | - 8.8 |
| | Jan.-Aug. | 64,700 | 74,500 | -13.2 |
| Oil-Fired Central Heating Equipment | July | 38,727 | 36,722 | + 5.5 |
| | Jan.-July | 250,258 | 259,996 | - 3.7 |
| Gas Ranges, Free-Standing | Aug. | 151,500 | 132,100 | +14.7 |
| | Jan.-Aug. | 929,200 | 979,300 | - 5.1 |
| Gas Ranges, Built-In | Aug. | 31,400 | 30,700 | + 2.3 |
| | Jan.-Aug. | 223,200 | 225,200 | - 0.9 |
| Gas Water Heaters | Aug. | 206,200 | 279,400 | -26.2 |
| | Jan.-Aug. | 1,741,000 | 1,888,800 | - 7.8 |
| Gas Vented Recessed Wall Heaters | Aug. | 30,700 | 33,500 | - 8.4 |
| | Jan.-Aug. | 202,800 | 222,500 | - 8.9 |
| Gas Floor Furnaces | Aug. | 10,300 | 11,800 | -12.7 |
| | Jan.-Aug. | 40,800 | 47,800 | -14.6 |
| Gas Direct Heating Equipment | Aug. | 128,900 | 167,400 | -23.0 |
| | Jan.-Aug. | 576,600 | 715,900 | -19.5 |
| Gas Unit Heaters & Duct Furnaces | Aug. | 13,300 | 13,100 | + 1.5 |
| | Jan.-Aug. | 92,800 | 96,400 | - 3.7 |
| Gas Incinerators | Aug. | 3,200 | 3,700 | -13.5 |
| | Jan.-Aug. | 25,000 | 29,000 | -13.8 |
| Electric Household Refrigerators | Aug. | 304,200 | 307,500 | - 1.1 |
| | Jan.-Aug. | 2,331,200 | 2,418,600 | - 3.6 |
| Electric Farm & Home Freezers | Aug. | 53,620 | 47,070 | +13.9 |
| | Jan.-Aug. | 317,500 | 328,640 | - 3.4 |
| Electric Ranges, Free-Standing | Aug. | 70,700 | 67,200 | + 5.2 |
| | Jan.-Aug. | 562,400 | 570,500 | - 1.4 |
| Electric Ranges, Built-In | Aug. | 127,500 | 123,400 | + 3.4 |
| | Jan.-Aug. | 1,022,200 | 1,018,100 | + 0.4 |
| Electric Water Heaters | Aug. | 61,400 | 47,500 | +29.3 |
| | Jan.-Aug. | 495,000 | 482,800 | + 2.5 |
| Electric Dishwashers | Aug. | 43,700 | 51,900 | -15.8 |
| | Jan.-Aug. | 374,200 | 361,100 | + 3.6 |
| Electric Food Waste Disposers | Aug. | 67,400 | 69,400 | - 2.9 |
| | Jan.-Aug. | 518,100 | 505,300 | + 1.7 |
| Dehumidifiers | Aug. | 55,600 | 14,700 | +207.9 |
| | Jan.-Aug. | 326,600 | 380,200 | -14.1 |
| Combination Washer-Dryers | Aug. | 8,063 | 12,237 | -34.0 |
| | Jan.-Aug. | 66,398 | 101,071 | -34.0 |
| Washers—Automatic & Semi. | Aug. | 265,448 | 230,540 | +15.0 |
| | Jan.-Aug. | 1,647,300 | 1,634,000 | + 1.0 |
| Washers—Wringer & All Other | Aug. | 67,114 | 65,959 | + 2.0 |
| | Jan.-Aug. | 437,649 | 482,860 | - 9.0 |
| Electric Dryers | Aug. | 79,015 | 69,658 | +13.0 |
| | Jan.-Aug. | 399,124 | 432,250 | - 8.0 |
| Gas Dryers | Aug. | 43,331 | 35,461 | +22.0 |
| | Jan.-Aug. | 204,155 | 228,046 | -10.0 |
| Metal Furniture | Aug. | * | * | -16.0 |
| | Jan.-Aug. | * | * | -15.0 |
| Vacuum Cleaners | Aug. | 270,100 | 280,575 | - 3.7 |
| | Jan.-Aug. | 2,082,348 | 2,186,051 | - 4.7 |
| Typewriters | July | 67,582 | * | * |
| | Jan.-July | 598,568 | * | * |
| Room Air Conditioners | Aug. | 54,200 | 77,900 | -30.4 |
| | Jan.-Aug. | 1,330,500 | 1,355,700 | - 1.8 |
| Unitary Air Conditioners (1) | Jan.-June | 199,556 | * | + 8.0 |
| Steel Barrels & Drums | July | 2,495,589 | 2,550,810 | - 2.2 |
| | Jan.-July | 18,066,957 | 17,796,301 | + 1.5 |
| Steel Pails | July | 6,318,191 | 6,765,578 | - 6.6 |
| | Jan.-July | 44,638,635 | 42,820,633 | + 4.2 |

(1) Including heat pumps

* Not reported

Figures represent manufacturers' shipments or sales.

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.



editorial voice of the national safe transit program

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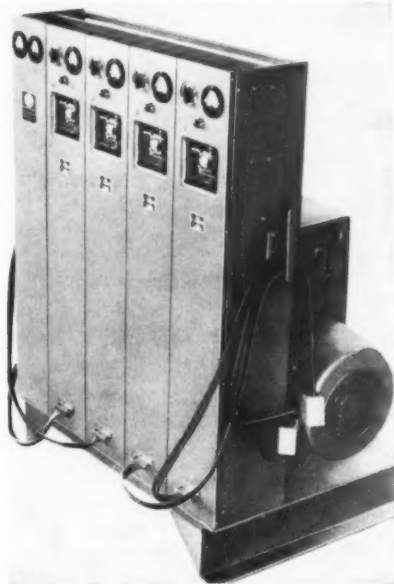
DANA CHASE PUBLICATIONS, INC.

Devoted to improving packaging, shipping, and materials handling methods for the appliance and metal products manufacturing industries. This section contains information on plant experience and industry advances for improving packaging and shipping methods, and prevention of in-transit loss. It also contains information on the National Safe Transit Committee's preshipment testing program and reports on NST activities.

Truck Battery Charger

A new four-circuit charger for charging lead-acid batteries in industrial electric trucks is being announced by Motor Generator Corp. With but one motor generator to operate and maintain, the Hobart four-circuit charger is easier to install and its in-place cost is less than four single-circuit chargers.

Models are available for charging 12,



15, 16 and 18 cell lead-acid batteries and in capacities up to 30 KW. The units are 34 in. wide, 45 in. long and 63 1/4 in. high.

Control is automatic through the use of a TVR and timer which automatically controls the charging rate, cuts off the battery when fully charged, shuts off the generator when charge is completed, shuts off the generator in case of power failure, and restarts it when power is resumed.

Circle No. 198 on Reader Service Card.

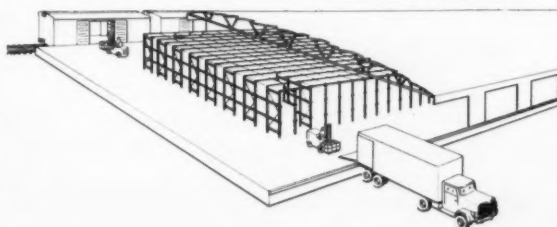
Stop Lights Control Lift Trucks

Six hundred trips a day make a super highway out of a ramp in the Bleached Board Div., West Virginia Pulp and Paper Co., Covington, Va. The company produces Kraft paper and paperboard in the manufacturing area of its plant and stores paper rolls in the basement. Automatic lift trucks move the rolls down the six-percent ramp to storage. Since the ramp has a blind corner, a system of traffic lights has been set up to prevent more than one truck from using the ramp at the same time. As a truck approaches the ramp, the driver checks a traffic light and proceeds if it is green. Upon entering the ramp, he pulls a conveniently placed cord which changes the light to red at both the top and bottom of the ramp. As he leaves, he re-sets the light for the next driver.

"Drive-in," "Drive-thru" Racks for Palletized Items

Acme Steel Co. has announced a new group of AIM Brand "drive-in" and "drive-thru" racks for high-density storage of palletized items. Use of the new rack allows floor space to be completely covered by storage racks, according to the firm, including space normally allotted for internal aisles if desired. Fork lift trucks and workers have full access to storage items, however.

Drawing shows possible arrangement of Acme Steel Co.'s new rack material in "drive-thru" warehousing setup. The installation allows material from either rail or truck deliveries to be conveniently stored from the unloading dock nearest the racks.



Circle No. 199 on Reader Service Card.

Towmotor Corp. Announces Management Changes

Galen Miller has been elected president of Towmotor Corp., Cleveland, Ohio, manufacturers of fork lift trucks and other material handling equipment. Robert L. Fairbank, former vice president, sales, succeeds Miller as executive vice president. C. Edgar Smith, president since 1951, assumes the newly-created post of chairman of the executive committee of the board of directors. The announcement was made by Lester M. Sears, chairman and founder of the company.

In the same action, Sears announced that Daniel M. Wessman, formerly assistant sales manager, assumes the position of assistant to the executive vice president. Alfred H. Roth has been named manager of marketing and advertising, and W. L. Utley becomes assistant to the president.

Davis Elected a Vice President of Stanley Works

Donald W. Davis has been elected a vice president of The Stanley Works, New Britain, Conn. He continues as general manager of the Stanley Steel Strapping division, the post to which he was appointed upon the retirement of Harrison C. Bristoll on July 1. Davis had been assistant general manager of the division since 1959. He joined the company in 1948, and was named assistant director of industrial relations in 1950 and director of industrial relations in 1957.

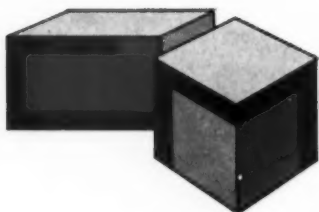
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ANNOUNCING

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STORAGE**

4. SHIPPING

It takes into consideration a multiple of cost item factors such as materials handling, floor space, inventory control, inspection, parts protection, etc. In many, or all of these areas, cost reductions can be realized without increasing capital outlay, through proper container utilization.

Chicago Mill and Lumber Company's Representatives are authorized to make this Plant Analysis Program available to you...and are qualified to recommend the best methods of container utilization for your plant.



TAKE THE FIRST STEP TODAY!

Write for Chicago Mill's "Container Utilization Evaluator" covering the 4 major cost areas where cost reductions can be made through proper container utilization. It will help to clarify and guide you through the container utilization areas of your plant.



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COMING FEATURES

GENERAL

STAFF COVERAGE OF MAJOR INDUSTRY MEETINGS, INCLUDING AHLMA, NAMA AND PEI

MORE ON STANDARDIZATION FOR INCREASED ECONOMY AND RELIABILITY

FEBRUARY: A SPECIAL SECTION ON THE AIR CONDITIONING, HEATING AND REFRIGERATION INDUSTRY

DESIGN

DESIGN DETAILS OF THE NEW PREWAY GAS DISHWASHER

FABRICATION

AUTOMATIC CLOTHES DRYER STAMPINGS PRODUCED WITH MINIMUM HANDLING

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A 600-FOOT COIL COATING LINE



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See Phone Book Yellow Pages "Spraying" for Graco Suppliers

Circle No. 328 on Reader Service Card.

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Westinghouse speeds

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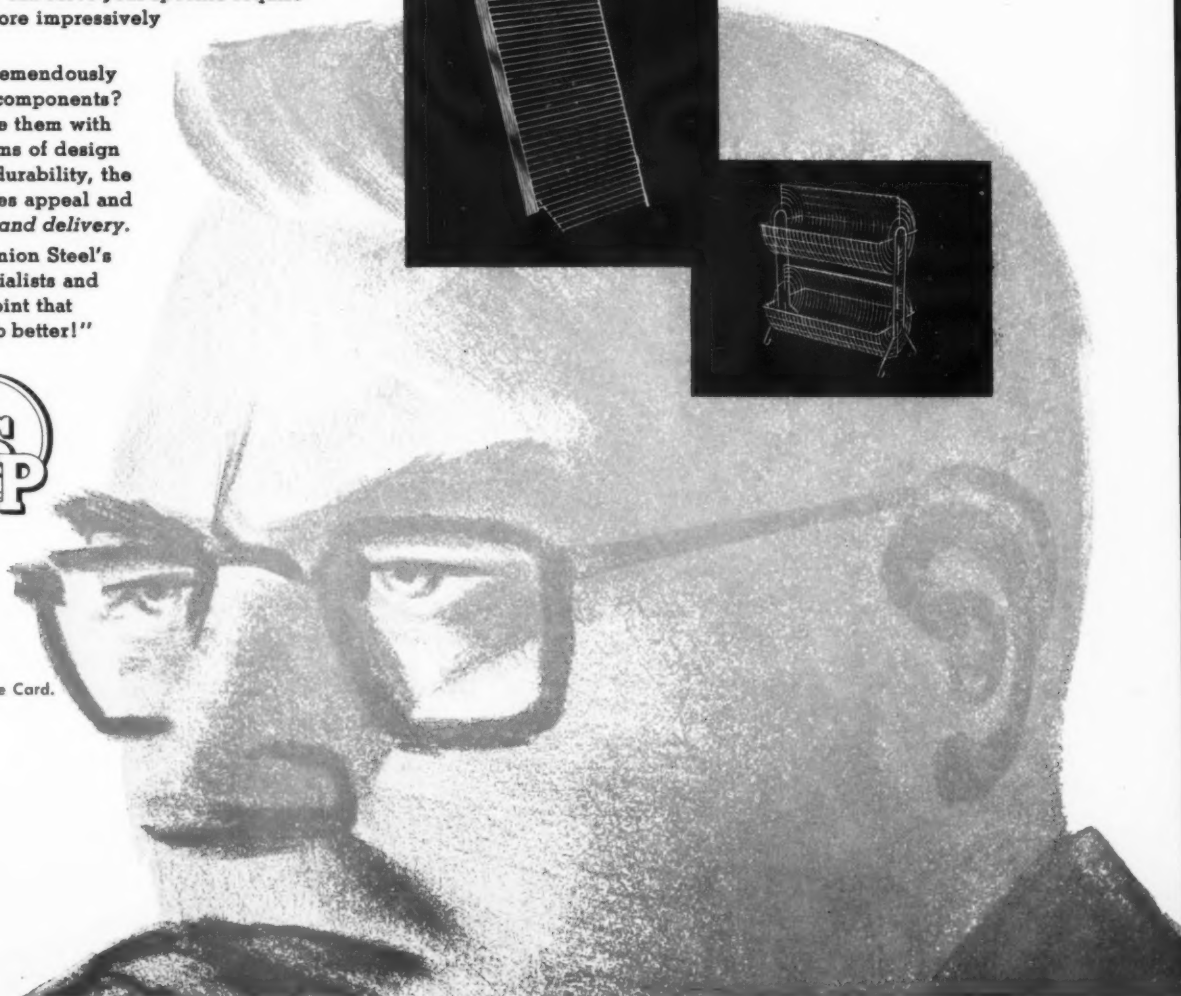
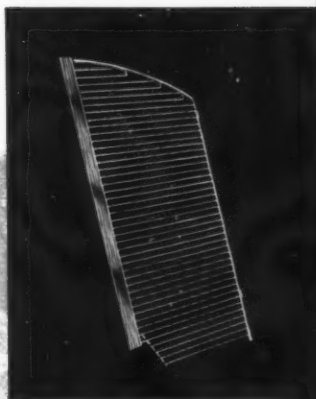
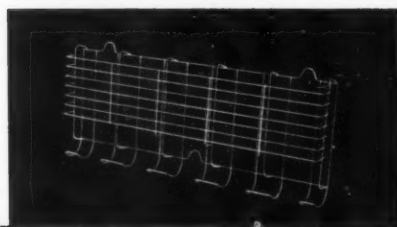
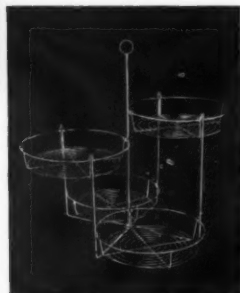
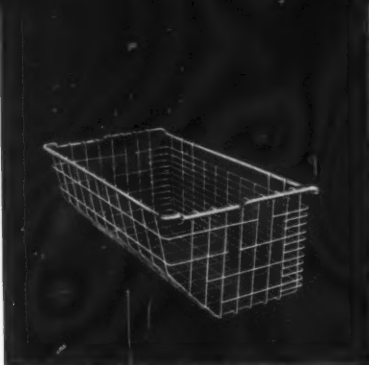
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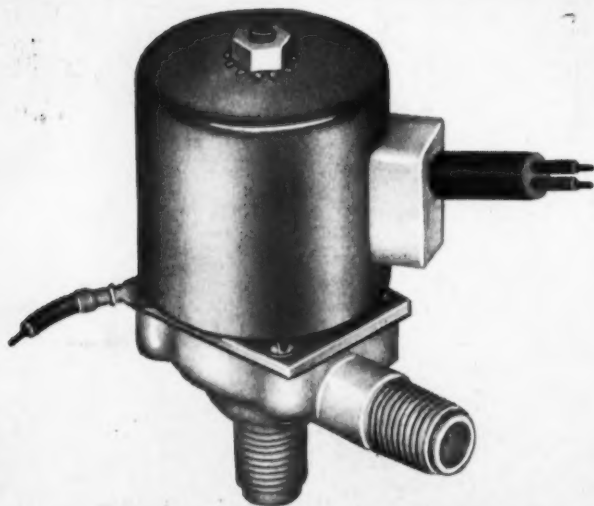
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